ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE II INVESTIGATION

Old Amenia Landfill Site No. 314006
Town of Amenia Dutchess County, New York

DATE: April 1993

Report

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, *Commissioner*

Division of Hazardous Waste Remediation
Michael J. O'Toole, Jr., P.E., *Director*

By:

Lawler, Matusky & Skelly Engineers

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK PHASE II INVESTIGATION

OLD AMENIA LANDFILL

Town of Amenia, Dutchess County, New York
NYSDEC I.D. No. 314006

Report

Prepared for

DIVISION OF HAZARDOUS WASTE REMEDIATION
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
50 Wolf Road, Albany, New York 12233
Thomas C. Jorling, Commissioner

LMSE-93/0501&576/058

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April 1993

TABLE OF CONTENTS

TABLE OF CONTENTS
(Continued)

LIST OF FIGURES

LIST OF TABLES

LIST OF PHOTOS

CHAPTER 1

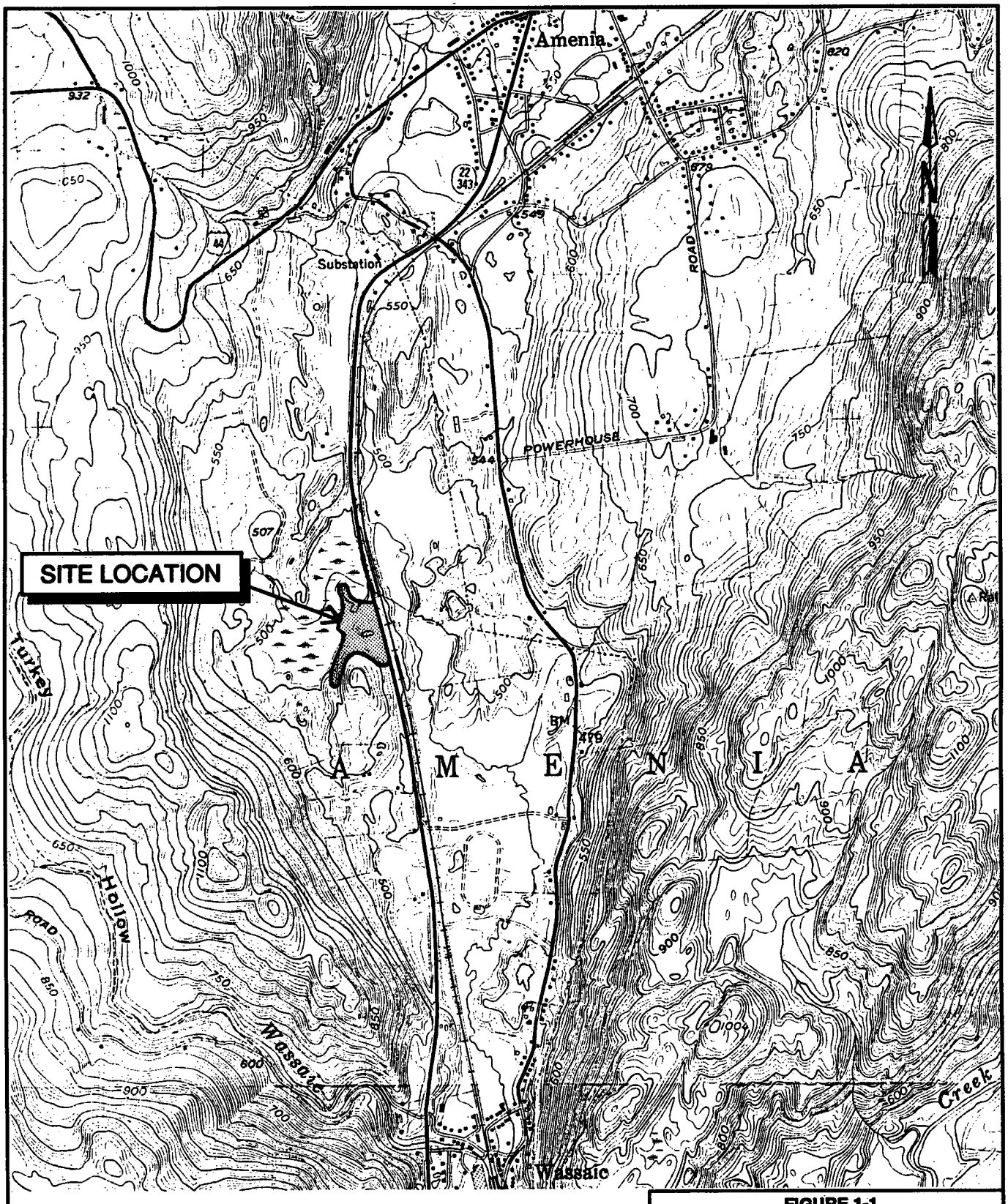
EXECUTIVE SUMMARY

The Old Amenia Landfill site is located on the west side of Route 22 in the Town of Amenia, Dutchess County, New York (Figure 1-1). Except for a period between the end of 1968 and April 1971, the town used the 10-acre site as a municipal dump from the late 1940s until 1976. The northern portion of the site, currently owned by Mr. Karl Saliter of Sharon, Connecticut, is occupied by the Sharon Oil & Gas Company fuel storage enclosure, which consists of a number of aboveground storage tanks within a fenced, bermed area (Figure 1-2). Mr. John Segalla of Amenia is the present owner of the southern portion of the site. With the exception of a small helipad and paved access road, the southern portion is a well-graded, maintained, grassy area. Photos 1-4, which depict the site, are oriented to Figure 1-2.

During the period of operation of the site as a landfill, the ownership of the property changed several times. The Town of Amenia rented the property from William and Mary Murphy for disposal of municipal wastes from approximately 1947 until December 1968, when the property was sold to Salvatore (Ben) Surico. The town discontinued dumping at the site and opened an emergency disposal area on the property immediately north of the site.

Industrial wastes were known to be present at the site during the time Mr. Surico operated the landfill, from 1969 until April 1971. Dutchess County Department of Health (DCDOH) inspection records, a local newspaper article, and an aerial photograph of the site dated April 1970 confirm the presence of a large number of 55-gal drums stored in a bermed area at the site. Industrial wastes were reportedly removed from the barrels and transported off-site in tanker trucks; the empty drums were sold or crushed and buried on-site. Local residents, however, noted oil on the surface of the water in the nearby wetlands area and oil-like odors emanating from the site. In addition, DCDOH inspection reports document that industrial wastes were leaking onto the ground surface from barrels stored at the site.

In 1971 the Town of Amenia assumed responsibility for the operation of the landfill when Mr. Surico filed for bankruptcy. The town continued to operate the landfill for the disposal



Map source: USGS 7.5 minute Quadrangle map, Amenia, NY CT, 1958, photorevised 1984

FIGURE 1-1

SITE LOCATION

OLD AMENIA LANDFILL

NYSDEC I.D. No. 314006

1992 NYSDEC PHASE II INVESTIGATION

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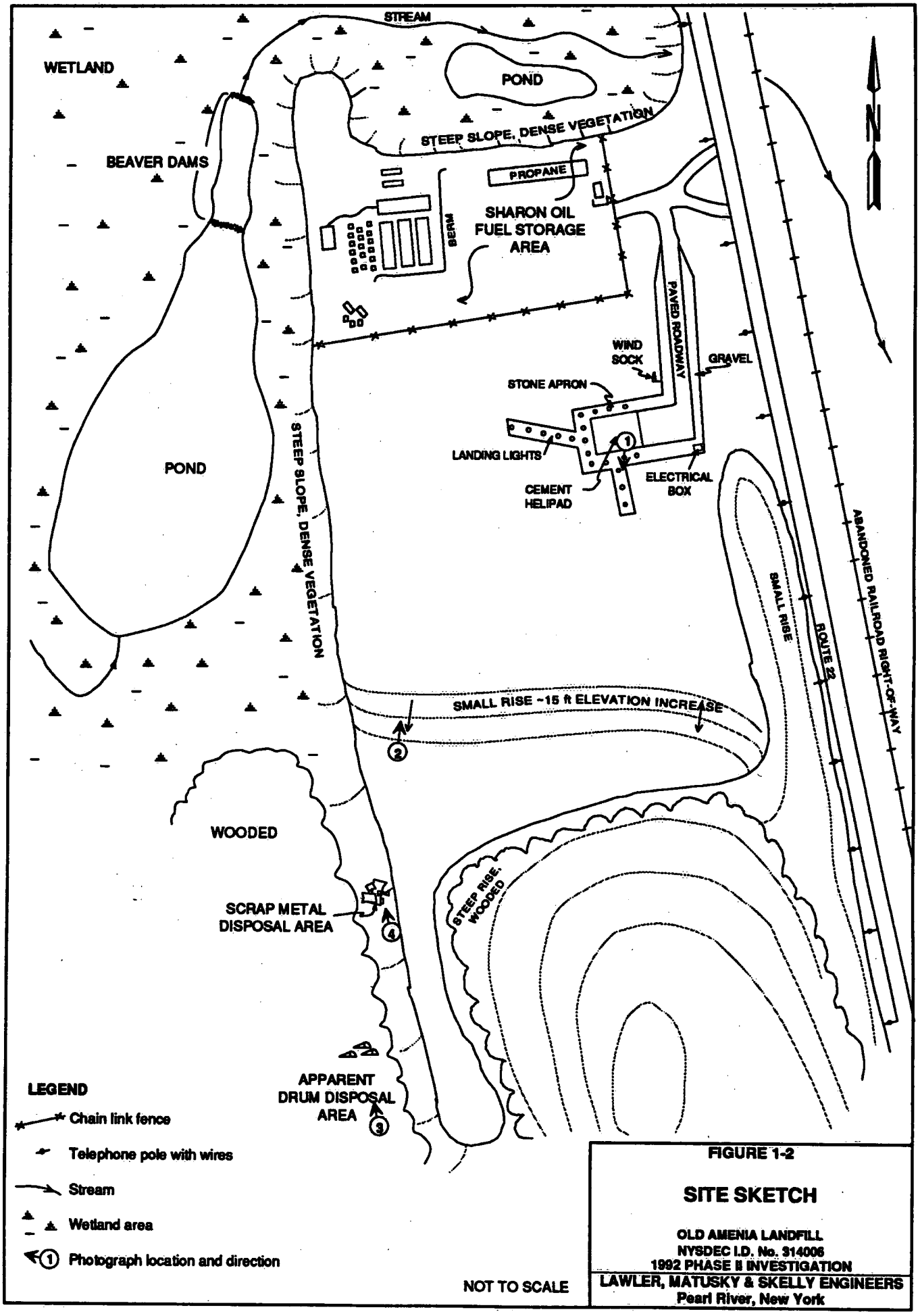

FIGURE 1-2

SITE SKETCH

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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PHOTO 1. Southern half of central site area, taken from center of helipad looking south.

PHOTO 2. Helipad and central site area, taken from top of ridge in southwestern portion of site looking northeast.

PHOTO 3. Drum disposal area west of access road near southern end.

PHOTO 4. Scrap metal disposal area on western bank of site near northern end of access road.

of municipal wastes until it was officially closed on 16 April 1976. Closure of the dump involved application of a soil cover of unknown depth and grading of the site.

The landfill was listed with the New York State Department of Environmental Conservation (NYSDEC) as a Reported Hazardous Waste Site in 1980 based on a site inspection that revealed evidence of drums in the southwest corner of the site in an area with no vegetative growth. The U.S. Environmental Protection Agency (EPA) identified the Old Amenia Landfill as a Potential Hazardous Waste Site in 1981. A Phase I investigation in August 1986 concluded that a Phase II investigation was needed to confirm the presence of hazardous wastes at the site and to determine whether any contamination present poses a significant threat to human health or the environment. In 1987 EPA collected a soil sample along the western side of the landfill during a limited field investigation. The sample contained 170 ppm of polychlorinated biphenyls (PCBs) (Aroclor 1248).

Lawler, Matusky & Skelly Engineers (LMS) was retained by NYSDEC to perform the Phase II investigation, which consisted of a geophysical survey, soil gas survey, and sampling and analysis of site soils, surface waters, and sediments. In addition, a literature search and an interview with a local resident familiar with the site history were conducted to obtain any available information on past waste disposal practices at the site.

The geophysical survey located several areas of potentially large concentrations of buried metallic materials. The results correlated well with the soil gas survey data, which identified three areas of high volatile organic compound (VOC) contamination in close proximity to the location of the identified magnetic anomalies. Vinyl chloride concentrations as high as 340,000 $\mu g/m^3$ were detected in soil gas samples obtained from the central site area between the helipad and the Sharon Oil fuel storage enclosure. It is suspected that a relatively large mass of buried metallic materials may exist at this location.

Surface soil samples collected along the western slope of the landfill during the Phase II investigation were analyzed for PCBs using an on-site mobile laboratory. Fifteen of the 20 samples analyzed contained detectable levels of PCBs, with concentrations ranging from 2.3 to 250 mg/kg. The sample with the highest identified PCB concentration was obtained from

the same area as the NUS Corporation sample collected in 1987 that contained 170 ppm PCBs (Aroclor 1248). Ten of the 20 surface soil samples with the highest PCB concentrations were also analyzed for VOCs in the on-site mobile laboratory. Only one sample had detectable concentrations of a VOC (ethylbenzene).

Four additional surface soil samples were collected from the locations showing the highest PCB concentrations in samples analyzed by the mobile laboratory; these samples were sent to a fixed laboratory for analysis. All four samples contained detectable levels of PCBs, with concentrations ranging from 0.12 mg/kg in the sample obtained at the southern end of the site near the apparent drum disposal area to 48 mg/kg in the sample obtained near the western end of the Sharon Oil fuel storage enclosure fence. These samples did not show detectable levels of VOC contamination, although the soil gas survey found moderate to high levels of VOCs at several locations. Because of the high mobility of VOCs in soil, volatile constituents in surface soils are likely to have volatilized to the atmosphere or migrated to subsurface soils or groundwater. The relatively high levels of VOCs detected in the soil gas indicate the likelihood of a substantial source of subsurface contamination.

Surface water and sediment samples were collected from the wetlands adjacent to the site. Significant VOC, semivolatile organic, pesticide, or metals contamination was not detected in the surface water/sediment samples. PCBs, however, were detected in three of the sediment samples and in one of the surface water samples, indicating that PCBs are migrating from the site to the adjacent wetlands.

Based on the detection of PCBs in site soils, surface water, and sediments, the New York State Division of Fish and Wildlife has determined that the Old Amenia Landfill poses a significant threat to wildlife. Therefore, the Old Amenia Landfill has been classified as a Class 2 site. A remedial investigation of the site is warranted to fully delineate the extent and magnitude of the contamination present, assess the degree and rate of migration of contaminants from the site, and evaluate the threat posed to human health and the environment by the contamination.

As part of the remedial investigation, LMS recommends the following field activities:

- ***Soil Sampling***: Additional soil samples should be collected throughout the site to delineate the extent of PCB contamination. In addition, subsurface samples should be collected from soil borings installed at the site to determine whether PCB contamination exists below the surface.

- ***Test Trenches***: LMS recommends the installation of approximately five test pits to locate - and immediately remove - any buried drums containing industrial or hazardous wastes. The test trenches should be excavated in areas that showed magnetic anomalies indicative of buried masses of metallic objects and had VOC concentrations in the soil gas samples, as determined during the Phase II investigation.

- ***Groundwater Monitoring***: A groundwater monitoring program is recommended to assess the existence and migration of VOC or PCB contamination in the aquifer underlying the site. This program would involve the installation of at least one upgradient and three downgradient monitoring wells to obtain pertinent data on the site stratigraphy, groundwater flow regime, and water quality.

- ***Biomonitoring***: LMS recommends a biomonitoring program to determine the extent of bioaccumulation of PCBs in aquatic organisms in the wetlands adjacent to the site. A two-stage program is the most cost-effective approach. Appropriate species for monitoring would be identified in the first stage, and an adequate number of organisms to provide statistically significant results for evaluating the impact of PCB contamination on aquatic species would be obtained and analyzed in the second stage.

CHAPTER 2

OBJECTIVES

Lawler, Matusky & Skelly Engineers (LMS), under contract to the New York State Department of Environmental Conservation (NYSDEC), conducted a Phase II investigation of the Old Amenia Landfill site located in the Town of Amenia, Dutchess County, New York. The investigation was targeted to (1) confirm the presence of hazardous wastes at the site; (2) adequately assess whether contaminants from the site have been released to the surrounding environment; (3) determine whether there is a significant threat to the environment or public health: (4) prepare final Hazard Ranking System (HRS) scores if directed to do so by NYSDEC; and (5) make recommendations for any appropriate future actions at the site.

Specific objectives of this Phase II investigation were to:

- Conduct a literature search to obtain any available information on past waste disposal practices at the site.
- Conduct a geophysics survey, a soil gas survey, and environmental sampling and analysis to identify and evaluate the presence, concentration, and nature of contamination and determine, to the extent limited by the scope of work, its release (if any) to the environment.
- Using information compiled in the study, determine the significance of any contaminant release and the degree to which it may threaten surrounding areas.
- Prepare a report documenting all findings, with a recommendation to classify or delist the site, if appropriate, or to proceed with additional site investigative work.

The Old Amenia Landfill Phase II investigation is discussed in detail in Chapters 3 and 4. This report includes the following appendices:

A - Data Usability Summary

B - Pertinent Files or Records

CHAPTER 3

DESCRIPTION OF PHASE II INVESTIGATION

3.1 LITERATURE REVIEW

Before initiating field activities, LMS reviewed relevant files on the Old Amenia Landfill at the Dutchess County Department of Health (DCDOH), the New York State Department of Health (NYSDOH), the NYSDEC Region 3 and Central offices, and EPA Region II offices. In addition, a local resident familiar with the history of the site was interviewed (Ref. 1). The literature review was performed to update the site history information presented in the Phase I report and to reevaluate it for completeness and accuracy. Site history details obtained in the literature review are presented in Section 4.1.

3.2 SITE RECONNAISSANCE

LMS personnel conducted a site reconnaissance on 9 October 1991 (Ref. 2). The objectives of the site visit were to confirm site conditions as described in the approved work plan, determine ease of equipment access, and perform air monitoring. Potential soil gas sampling and test trench locations were also identified during the reconnaissance. Results of the site reconnaissance are discussed in Section 4.4.1.

3.3 GEOPHYSICS SURVEY

A geophysics survey was performed to locate the best areas for test pit excavation as recommended in the work plan for the Old Amenia Landfill site. Results of the survey were reviewed in conjunction with the soil gas survey results to determine whether the two surveys agreed on the locations of potential areas of subsurface contamination.

Two methods of geophysical investigation were used at the site: a surface magnetometry survey and resistivity measurements. The magnetometer accurately records the total magnetic field at many individual locations. Thus, magnetometry surveys are most applicable for

locating buried masses of metallic objects such as drums. The total magnetometer reading measures several components: the main magnetic field (which remains constant over a period of time), an external field (which changes over relatively short time intervals during the survey), and a third field that results from any anomalies that affect the main field. The external field varies over the course of the day; to effectively compensate for this, additional readings are collected at a fixed base station of known field intensity. The variations recorded at this location during the survey are then used to adjust the corresponding main-field measurements.

Anomalies within the main field may be created by both small and large magnetic masses. Force created by a magnetic object is directly proportional to the mass of the object and inversely proportional to the distance of the object from the point of measurement. The main field is created by a large mass (the earth's core) at a vast distance from the ground surface; this field may be altered by a relatively small object much closer to the point of measurement. A larger object or mass at a greater depth could also affect the main-field measurement.

The magnetometry survey was conducted over the entire site surface. The only areas excluded were on the northern and western sides of the site where the steep slopes made transversing for measurement collection nearly impossible. Areas within the confines of the chain-link fence (Sharon Oil & Gas Company property) and the footprint of the helipad were also not surveyed. A 10-ft grid pattern was used for data collection. Multiple readings were made at each station to measure the stability of the external field. Results of the magnetometry survey are discussed in Section 4.4.2.

An electrical resistivity survey was conducted at five locations on the site. Electrical resistivity surveys measure the apparent resistivity of subsurface materials by introducing an electrical current into the ground between two electrodes separated by a known distance. A second pair of electrodes is used to measure the difference in potential. Various spacings of electrodes are used to measure the apparent resistivity of materials at different depths above and below the saturated zone. The results of each measurement can be compared with known values for specific materials and subsurface conditions. The data and known values

are then used to assess the nature of subsurface conditions at the site. Limits of fill areas, depth to water table, and generalized stratigraphic layering can be determined by using vertical electrical soundings (VES). Results of the electrical resistivity survey are also included in Section 4.4.2.

3.4 SOIL GAS SURVEY

A soil gas survey was conducted at the Old Amenia Landfill site between 5 and 7 November 1991. The 24 soil gas points installed at the locations shown on Figure 3-1 were concentrated in areas identified during the site reconnaissance as potential locations for test trenches. Twelve points were installed south of the Sharon Oil fuel tank enclosure in the central landfill area; two points, immediately inside the fuel storage area fence; one point, in the peninsula north of the Sharon Oil enclosure; five points, around the unvegetated, slumped area on the southwest side of the central portion of the site; two points, at the northern end of the access road leading to the reported drum disposal area; and two points, near the drum disposal area in the southwest corner of the site. Soil gas samples were analyzed on-site for volatile organic compounds (VOCs) by Tetra•K Testing of Westfield, Massachusetts, using a mobile laboratory (Ref. 3).

To obtain the best results, soil gas points were installed 3 to 6 ft below grade to prevent groundwater from being introduced into the sampling system. A slam bar was used initially to drive the guide hole. Upon removal, the slam bar was inspected for moisture to determine whether the saturated zone had been penetrated. If the slam bar met refusal, a new hole was made 1 to 2 ft away.

The steel soil gas point was then assembled with Teflon tubing, inserted into the original hole, and driven to the desired depth. The hammer and rod assembly was subsequently removed from the hole, leaving the point and attached tubing in place. Sand was used to backfill around the tubing up to 1 ft above the point to provide a capture area for soil gases. Bentonite powder and water were then used to backfill the remainder of the hole, thus creating a seal above the point. A clay seal was installed around the tubing at grade level to prevent any inflow of ambient air during purging and sampling of the hole. Finally, a clay

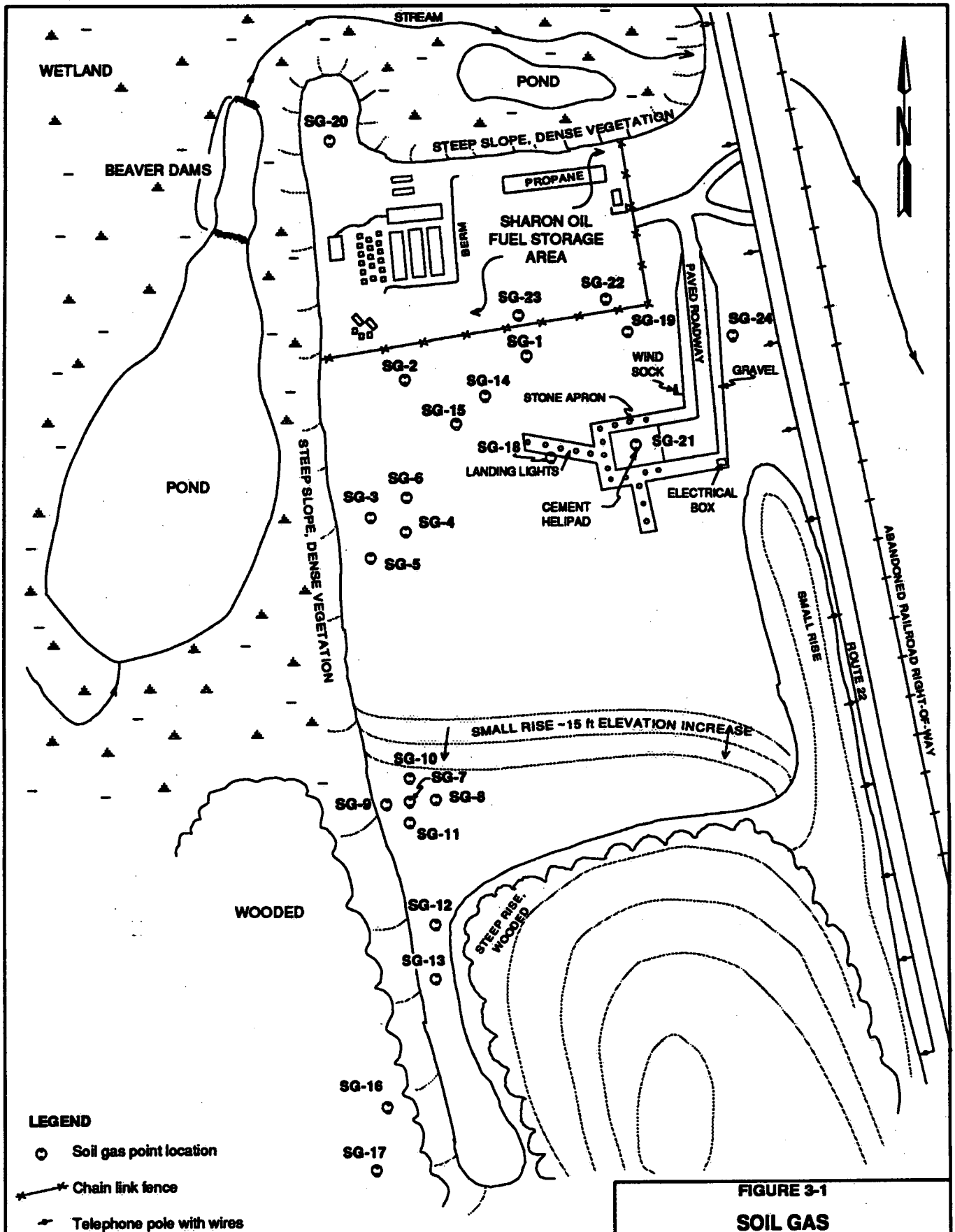

FIGURE 3-1

SOIL GAS SAMPLING LOCATIONS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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Pearl River, New York

plug was inserted at the end of the tube to prevent debris from entering the tubing prior to sampling. (The construction details of a typical soil gas point are shown in Figure 3-2.)

Measured soil gas samples were obtained using a portable pumping system. Samples can be obtained at any time after installation of a point except immediately after precipitation. Sampling is typically delayed for 24 hrs following a rainstorm to allow the saturated upper soil layer to reach equilibrium.

3.5 SAMPLING

3.5.1 Surface Soil Sampling

Surface soil sampling was conducted at the Old Amenia Landfill site on 7 and 8 November 1991 to confirm and quantify any PCB contamination present. Samples were analyzed in the on-site mobile laboratory so that if "hot spots" were found, additional soil samples could be collected from those locations for analysis at a fixed laboratory. Twenty surface soil samples were collected from a depth of 0-6 in. at the locations shown on Figure 3-3. Eight of these samples were taken from locations corresponding to sampling locations NY66-S1, -S2, -S3, and -S4 selected by NUS Corporation (under contract to EPA) during the 1987 field investigation of the site (Ref. 4). Samples were collected every 50 ft (total of 10) at the base of the western slope of the site beginning at the northern end of the Sharon Oil enclosure fence line. The remaining two samples were collected at the locations of highest observed PCB concentrations based on the on-site mobile laboratory analyses.

All soil samples were analyzed on-site for PCBs using the mobile laboratory. In addition, the 10 (of 20) soil samples with the highest levels of PCB contamination as determined by on-site analyses were analyzed for target compound list (TCL) VOCs.

On 11 November 1991 four additional surface soil samples were collected for analysis at a fixed analytical laboratory. Two samples were collected from the locations with the highest field-measured PCB concentrations (SS-17 and -18, as shown on Figure 3-3). One sample was collected from the unvegetated bare spot in the southwestern portion of the central site area

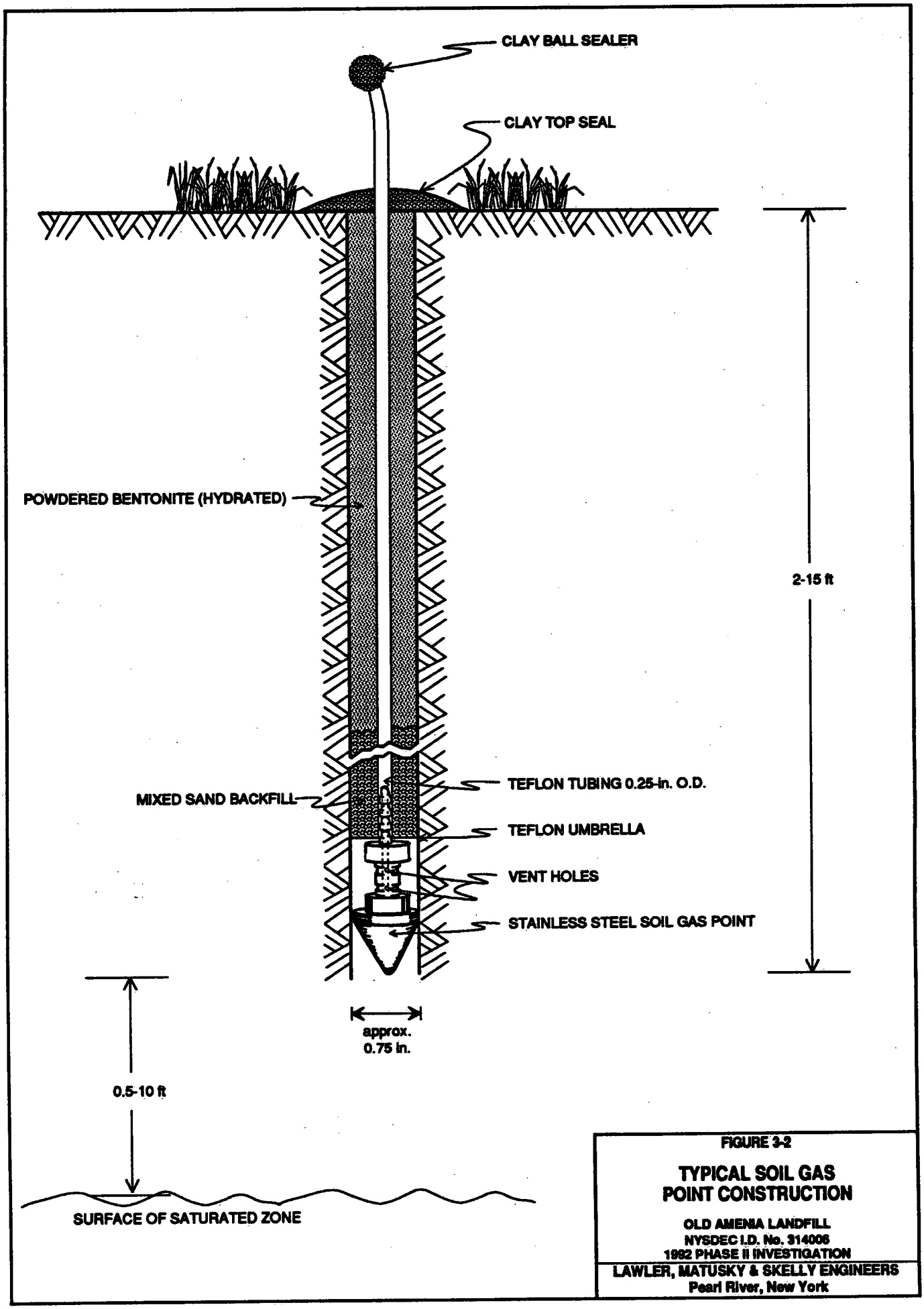

FIGURE 3-2

TYPICAL SOIL GAS POINT CONSTRUCTION

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NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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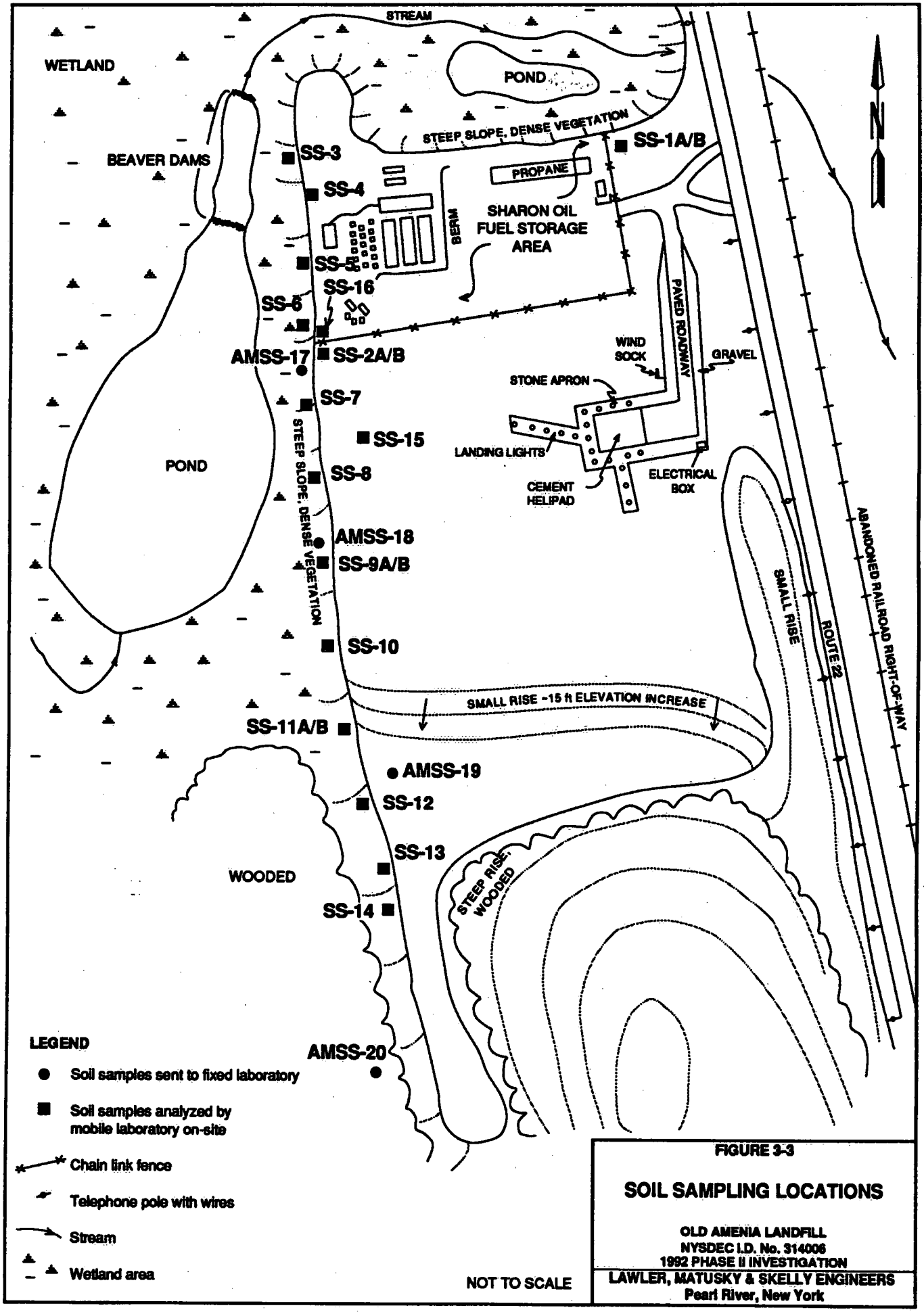
STREAM
WETLAND
POND
STEEP SLOPE, DENSE VEGETATION
SS-1A/B
BEAVER DAMS
SS-3
PROPANE
SS-4
BERM
SHARON OIL
FUEL STORAGE
AREA
SS-5
SS-16
SS-6
PAVED ROADWAY
WIND
SOCK
GRAVEL
AMSS-17
SS-2A/B
STONE APRON
SS-7
SS-15
LANDING LIGHTS
POND
STEEP SLOPE, DENSE VEGETATION
SS-8
CEMENT
HELIPAD
ELECTRICAL
BOX
AMSS-18
SS-9A/B
SMALL RISE
ROUTE 22
ABANDONED RAILROAD RIGHT-OF-WAY
SS-10
SMALL RISE ~15 ft ELEVATION INCREASE
SS-11A/B
AMSS-19
SS-12
SS-13
WOODED
STEEP RISE,
WOODED
SS-14
AMSS-20
LEGEND
Soil samples sent to fixed laboratory
Soil samples analyzed by
mobile laboratory on-site
Chain link fence
Telephone pole with wires
Stream
Wetland area
NOT TO SCALE
FIGURE 3-3
SOIL SAMPLING LOCATIONS
OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION
LAWLER, MATUSKY & SKELLY ENGINEERS
Pearl River, New York

(SS-19) and one from the drum disposal area in the southwestern corner of the site (SS-20). Matrix spike/matrix spike duplicate (MS/MSD) samples were collected at sampling location SS-19. All samples were packed in ice chests and shipped via overnight courier to a fixed laboratory for full TCL organics (including PCBs), metals, cyanide, extraction procedure (EP) toxicity, reactivity, ignitability, and corrosivity analyses.

3.5.2 Surface Water/Sediment Sampling

An LMS crew sampled surface water and sediments according to NYSDEC protocols at five locations (Figure 3-4) between 20 and 23 November 1991 (Ref. 5). All locations were selected by LMS personnel according to work plan recommendations and were approved by a NYSDEC representative before sampling commenced. Surface water/sediment sample AMSW/AMSD-1 was collected from the stream in the wetland area that borders the landfill to the north. AMSW/AMSD-2 through -5 were collected from the pond that borders the landfill on the west.

Samples were submitted to Nytest Environmental Inc. of Port Washington, New York, for VOC, semivolatile organics, pesticides, PCBs, metals, cyanide, and conventional parameter analyses. In addition, samples were sent to Aquatec Inc. of Colchester, Vermont, for low-level PCB analyses. Surface water samples were collected directly into the sample containers or with Teflon dip buckets. Sediment samples were collected with stainless steel core tubes or with a petite ponar. Temperature, pH, and specific conductance were measured at each sampling location. The results of these field measurements are presented in Table 3-1.

Samples were collected in precleaned bottles/vials provided by Aquatec and Nytest. All sample containers were labeled with the site name, job number, sample I.D., date, time, and parameters for analysis. Preservatives were added in the field where appropriate. Sample containers were packed in ice chests maintained at 4°C and shipped via overnight courier to Nytest and Aquatec for analysis under chain-of-custody protocol.

Because of damage incurred during shipping, surface water samples AMSW-3, -4, and -5 had to be resampled on 23 November 1991 for the volatile organic, semivolatile organic, and

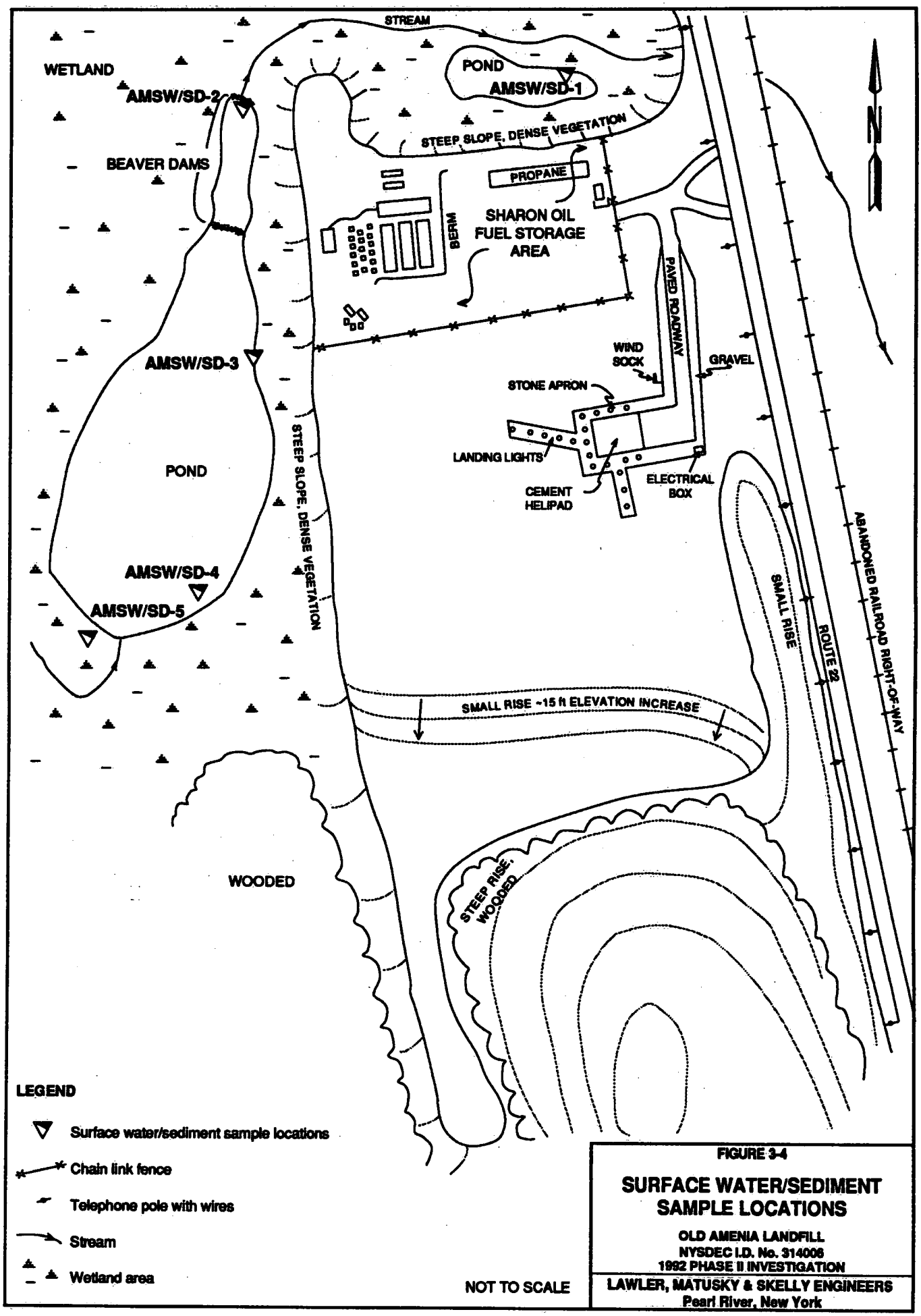

FIGURE 3-4

SURFACE WATER/SEDIMENT SAMPLE LOCATIONS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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Pearl River, New York

TABLE 3-1

FIELD MEASUREMENT DATA FOR SURFACE WATER SAMPLES

Old Amenia Landfill - NYSDEC I.D. No. 314006

SURFACE WATER I.D.	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm @ 25°C)	pH UNITS
AMSW-1	8.1	459	7.8
AMSW-2	8.1	408	8.0
AMSW-3	8.3	408	8.0
AMSW-4	8.4	425	8.4
AMSW-5	8.4	444	7.9

pesticide fractions. Identical sampling protocols were used to collect the second set of surface water samples, which were submitted to Nytest for analysis.

3.6 AIR MONITORING

During the site reconnaissance visit, an air monitoring program was conducted using an HNU photoionization detector (PID), an OVA flame ionization detector (FID), and an MSA combustible gas indicator (CGI) as discussed in the site inspection report (Ref. 2). Air monitoring, conducted in accordance with the NYSDEC-approved work plan, consisted of traverses of the site within the property boundaries. The survey objectives were to determine whether any previously unidentified sources of air contamination were present at the site and to confirm that the proposed level of personnel respiratory protection was appropriate.

Air monitoring was performed at ground level and within the breathing zone (4 to 5 ft above grade) (Ref. 2). This information was used to prepare the final site-specific health and safety plan (HASP) followed by LMS and subcontractor personnel during field investigation activities (Ref. 6). Based on site conditions, Level D personal protective equipment was specified for field activities. As a contingency safety measure, Level C equipment, including full-face, air-purifying respirators, was available at the site at all times.

CHAPTER 4

SITE ASSESSMENT

4.1 SITE HISTORY

The Old Amenia Landfill site is an inactive municipal dump located on the west side of Route 22 in the Town of Amenia, Dutchess County, New York. Operation of the site as a dump began in the late 1940s. A Dutchess County Department of Health (DCDOH) inspection report dated 24 October 1947 identified the site as a municipal dump and noted unsatisfactory conditions. The property was owned at that time by William and Mary Murphy, who purchased a 22-acre site, which includes the 10-acre parcel under investigation, from Anna Kaplan Paley in May 1945.

During the Murphys' ownership of the land, the town rented the property and operated the dump. A 26 April 1963 DCDOH inspection report states that the dump was jointly operated by the highway departments of Amenia and the Town of Sharon (Connecticut); users of the site were listed as the Town of Sharon and the Sharon Hospital. Additional site users were listed in an October 1966 DCDOH inspection report as the Town of Amenia, residents of the Town of Sharon, Tri-Wall Corporation, and two unnamed commercial haulers.

Operation of the landfill continued until December 1968, when William Murphy sold the 22-acre site to Salvatore (Ben) Surico. At this time the Town of Amenia discontinued dumping at the site and opened an emergency disposal area immediately north of the site on property owned by Walt and Eleanor Culver. This area (not included in this Phase II investigation) was operated for approximately one year, starting in January 1969.

In late 1968 Mr. Surico applied to Dutchess County and the Town of Amenia for permits to operate a landfill on the former Murphy property. The county health commissioner granted permission for the site to be used for the disposal of refuse in January 1969; the town, however, refused. Later in the year the town was forced to grant the permit as the result of an Article 78 proceeding.

Mr. Surico operated the landfill from 1969 until approximately April 1971. The landfill permit allowed for the disposal of household refuse only. Gerald Wilcox, a local resident interviewed as part of the Phase II investigation, indicated that it was common knowledge in Amenia at that time that industrial wastes were present at the site (Ref. 1). An article in the *Harlem Valley Times* dated 25 June 1970 states that at a Town Board meeting a local resident asked whether industrial wastes were being dumped at the Amenia Landfill site (Ref. 7). A town supervisor responded that cutting oil was being handled at the site in an area enclosed by a 6-ft embankment. The cutting oil, from manufacturing plants in Connecticut and Massachusetts, was held at the landfill; after a full tankerload was collected, it was trucked to New Jersey for resale. No oil or waste products were reported to have been disposed of at the landfill; however, oil was routinely applied at the site to keep the dust down. The resident noted that oil had been seen floating in the adjacent stream and that there had been reports of odors.

A DCDOH internal memoradum dated July 1970 notes the presence of drummed industrial wastes at the site (Ref. 8). An inspection report dated 23 October 1970 reported the spillage and accumulation of liquid industrial wastes on the ground, and a letter was subsequently sent to Salvatore Surico by DCDOH requesting that this condition be rectified (Ref. 9). A 26 October 1970 DCDOH memorandum reported the presence of several hundred barrels of industrial wastes at the site; some had been punctured and were discharging chemicals to the ground surface (Ref. 10). The report states that no industrial waste was observed in or near the surface waters at the site. The DCDOH inspector noted the following names of companies and contents listed on the barrels:

- Remington Rand Electric Shaving Division
  60 Main Street
  Bridgeport, Connecticut
  Contents: Crystoton [Crystolon?]

- U.S. Polymeric
  Contents: P.F. Etchant - Ferris [ferrous] chloride

- ALRAC Division Radiation Research
  649 Howe Street (P.O. Box 2109)
  Stamford, Connecticut
  Contents: 2 Pyorrolidone [2-pyrrolidone]

- The Hubbard Hall Chemical Co.
  Waterbury, Connecticut
  Contents: Mineral Spirits

The inspection report also notes that the chemicals were reportedly pumped out of the barrels for shipment to New Jersey. Undamaged empty barrels were sold; damaged barrels were crushed and buried on-site.

An aerial photograph dated 12 April 1970 obtained from the Dutchess County Real Property Tax Office shows approximately 200 drums lined up in a bermed area of the site (Plate). According to Mr. Wilcox, the bermed area was located behind a small ridge that obscured any view of the drums from passersby on Route 22. Mr. Wilcox stated that it was believed that solvents were being dumped into a pit located at the rear of the site and that the wastes being disposed of at the Old Amenia Landfill were similar to those disposed of at the Sarney site (Ref. 11).

The Sarney Farm is a National Priorities List (NPL) site consisting of a 5-acre former landfill located on Benson Hill Road in the Town of Amenia, approximately 5 miles south of the Old Amenia Landfill site. A Phase II investigation of the Sarney site was completed in June 1985, and a Record of Decision was issued by EPA in September 1990. Buried drums containing liquid solvents were found at the Sarney site. Wastes reported to be disposed of on-site included 55-gal drums of ethylene dichloride, cleaning solvents, inks, acids, water-based glues, and machine oils. Contaminants identified in the soils at this site included high concentrations of toluene, 2-butanone, 2-methyl-2-pentanone, trichloroethene, bis(2-ethylhexyl) phthalate, di-n-butylphthalate, naphthalene, and 2-methyl-naphthalene. Groundwater contaminants detected included 1,2-dichloroethane, vinyl chloride, bis(2-ethylhexyl)phthalate, and trace amounts of other organic chemicals. No pesticides or PCBs were identified in any contaminated media at the Sarney site.

In April 1971 a nearby resident filed a complaint with NYSDEC concerning odors similar to the smell of old oil emanating from the Old Amenia Landfill (Ref. 12). However, a DCDOH memorandum dated 27 April 1971 reported that the industrial waste storage area at the landfill was being dismantled and that the barrels were being removed (Ref. 13). In June of

1971, Mr. Surico transferred the property to the Tri-Town Landfill Corporation (Tri-Town), of which he was president. In August of 1971, 2 acres of the total 22-acre dump site were sold by Tri-Town to Thomas C. Romano, Peter J. Brevi, and Archie Deane, Jr., all of Amenia. This 2-acre portion of the site, currently owned by Karl Saliter of Sharon, Connecticut, is used by Sharon Oil for fuel storage; several aboveground tanks are located in this area in a bermed and fenced area. Mr. Saliter and his wife are the owners of the Sharon Oil & Gas Company.

Mr. Saliter stated that in October 1982, when the fuel oil storage area on the northern portion of the site was being constructed, he encountered approximately 10 ft of garbage and fill material during excavation. He also observed, on the northern bank of the site, three or four drums leaking a substance he believed to be fuel oil (Ref. 14).

A November 1971 DCDOH inspection report for the landfill states that Mr. Surico was in bankruptcy and that the Town of Amenia had assumed responsibility for operating the landfill. The town continued to operate the landfill until it was officially closed on 16 April 1976, although the property was transferred several times during this period. In July 1972 the 20-acre site formerly owned by Tri-Town was sold to Alistair Martin by the bankruptcy court. The property was then transferred by Mr. Martin to his wife, Edith Park Martin, in September 1972, then to the Curtiss-Wright Corporation by Mrs. Martin in June 1973.

Throughout the remaining period of operation of the landfill by the Town of Amenia (1971 to 1976), numerous violations were documented by DCDOH inspectors, including uncovered refuse, rodents, blowing papers, improper landfilling techniques (e.g., improper slope on completed areas), and unauthorized burning. In May 1974 the Curtiss-Wright Corporation (then owner of the property) was cited by the county for allowing the Town of Amenia to operate the dump in violation of NYSDEC regulations. A DCDOH inspection report dated February 1972 indicated that a fire had occurred at the site as a result of dumping of chemicals from the Sharon Hospital (Ref. 15). In July, September, and October 1973 DCDOH inspections reported the presence of barrels of liquid wastes at the rear of the site. A February 1974 DCDOH report indicated that the barrels had reportedly been removed (Ref. 15).

The town ceased operation of the landfill in 1976 at about the time that the Harlem Valley Landfill opened 0.25 mile southwest of the site. Closure of the dump involved application of a soil cover of unknown depth to the main fill area by a local contractor hired by the Town of Amenia. Following closure, the property remained under the ownership of the Curtiss-Wright Corporation until December 1982, when it was transferred to Metal Improvements Co., a wholly owned subsidiary of Curtiss-Wright. The property was then sold to the current owner, John Segalla, of Amenia, in July 1986.

The landfill was listed with NYSDEC as a Reported Hazardous Waste Site in April 1980. A 13 November 1979 inspection revealed evidence of drums in the southwest corner of the site in an area with no vegetative growth. A NYSDEC internal memorandum dated 14 November 1985 stated that an unknown number of 55-gal drums were stored at the site at the time of the landfill's closure and that some of the drums were later removed. No drums were observed during the 1986 Phase I site investigation. A NYSDEC/NYSDOH inspection in September 1990 did not reveal any drums at the site.

EPA identified the landfill as a Potential Hazardous Waste Site in 1981 and conducted a site inspection and limited field investigation in February 1987. Groundwater, surface water, soil, and sediment samples were collected by NUS Corporation. The analytical results of this investigation are included in Appendix B (Ref. 4). Analysis of a soil sample from the west side of the landfill, approximately 6 ft from the end of the fence that surrounds the Sharon Oil tank storage area, detected a PCB (Aroclor 1248) concentration of 170 ppm. In addition, phthalate compounds were identified in several of the soil, surface water, and sediment samples. The 1986 Phase I investigation concluded that a Phase II investigation was needed to determine the existence and extent of hazardous waste contamination at the site.

4.2 SITE TOPOGRAPHY

The Old Amenia Landfill site is approximately 10 acres in size. The former landfill area is well graded and relatively flat. The site is vegetated with grass and slopes to the north and west. The northern portion of the site is occupied by the Sharon Oil fuel storage enclosure.

The oil storage tanks are contained within a fenced, bermed area. A helipad in the center of the site is reached by a small paved road. Access to the site is unrestricted.

The site is adjacent to a wetland through which runs a permanent stream (an unnamed tributary of Wassaic Creek). The western and northern sides of the former landfill area are steeply sloped, dropping approximately 20 to 40 ft down to the wetland, and densely vegetated with bushes and trees. The southern portion of the site slopes gently upward to the top of a small rise, then climbs more steeply to the top of a densely wooded hill. A cleared access road (unpaved) runs from the top of the rise at the southern end of the site along the western edge of the wooded hill.

Two lakes upgradient (i.e., 20 ft higher in elevation) of the site are located approximately 1500 ft to the west. Both discharge to the permanent stream running through the wetland/pond area adjacent to the site. The nearest residence is approximately 1350 ft to the west. The nearest commercial building is about 2 miles northeast of the site. There are no national or state parks or forests within 2 miles.

4.3 SITE HYDROGEOLOGY

The site is directly underlain by glacial outwash sand and gravel deposits that are confined to the valley floor and are of limited areal extent. Approximately 1 mile north of the site, the sediments are at least 70 ft thick and comprise 28 ft of water-bearing gravel overlain by 42 ft of clay with a gravel lens (Ref. 16). There are no site-specific data to confirm the presence of this thick clay, however. The unconsolidated deposits that blanket the adjacent hillsides are composed of glacial till.

The glacial sediments are underlain by marble bedrock of the Cambrian-Ordovician Age Stockbridge Formation. There are several thrust faults related to the Taconic Orogeny within 1 to 2 miles of the site. The bedrock is present at or within 3 ft of the ground surface at several locations throughout the valley, including the hills north and south of the site (Ref. 17).

Both the glacial sediments and marble bedrock (designated as Aquifer No. 74 in Ref. 17) have been developed for domestic (rural area) and public (Town of Amenia) water supplies and are considered to constitute the aquifer of concern. The glacial sediment portion of the aquifer of includes the sand and gravel deposits that are bounded by the adjacent glacial till-covered mountains (Ref. 17). Based on the available literature, hydraulic connection between these two general aquifers cannot be confirmed. However, because bedrock is reportedly within 3 ft of the ground surface in the immediate vicinity of the site, both the bedrock aquifer and the glacial sediment aquifer may be affected by conditions at the site.

4.4 PHASE II RESULTS

4.4.1 Site Inspection

The results of the site inspection conducted on 9 October 1991 indicated that the vegetative cover over the main landfill area is well maintained (Ref. 2). Fill material, e.g., broken glass and rubber, was evident in only a few areas. A number of small bare spots were observed on the southern half of the site. Three slumped areas were seen along the western edge of the landfill and in the center of the site near the helipad. The vegetation adjacent to the Sharon Oil enclosure was stressed, and there was a small patch of standing water. Light leachate staining was noted on the soil in an area located in the southeastern corner of the site.

A small ditch on the western slope of the landfill near the end of the Sharon Oil enclosure fence contained exposed fill material, several rusted (empty) drums, a tire, and several brown bottles. A similar ditch with fill material and rubbish was also observed farther to the south on the western slope. An apparent scrap metal disposal area on the western slope near the beginning of the access road to the drum disposal area contained a topless empty drum; several other drums protruded from the ground. Other scrap metal, e.g., old appliances, was also piled in this area.

An apparent drum disposal area was located in the wooded area west of the access road near the southern end of the road. The ground surface in this area was hummocky, and 10 to 12 drums protruded from the ground. The drums did not appear to be crushed.

4.4.2 Geophysics Data

The results of the magnetometry survey conducted at the site showed a varied pattern of magnetic signatures (Ref. 18). Two areas exhibited relatively stable magnetic patterns, indicating that the fill materials do not extend into these areas. The first area was located at the northwestern corner of the site, north of the Sharon Oil fuel storage enclosure; the second area, at the southern end of the landfill along the base of the tree-covered hill. Several outcrops were noted in this area and field measurements ranged between 53,000 and 55,000 gammas, indicating a relatively uniform subsurface material at this location. It is believed that the fill does not extend into or beyond this area.

Several zones within the confines of the landfill exhibited a pattern consisting of a low anomaly to the north with a corresponding high to the south (Figure 4-1). The most prominent zone, located between the Sharon Oil enclosure and the helipad, had a relatively high magnetic field strength trending in an east-west direction across the site. A large area protrudes to the south along this anomaly near the western side. Because no measurements were taken on the Sharon Oil property, no correspondingly low anomaly could be associated with this area. The fencing and reinforcing rods within the concrete of the helipad could cause these magnetic variations; however, the high intensity of the data indicates a nearly linear east-west pattern approximately 360 ft long and 30 to 40 ft wide. Features of this type are generally more indicative of larger-scale disturbances, such as trenches, pipelines, or other buried metallic masses.

A second anomaly oriented in an east-west direction was recorded at the grade change in the southern portion of the central site area. This appears to be a lift of fill or cover material with an approximate 15-ft difference in elevation. Corresponding high and low anomalies were found on either side of this sloped area. These anomalies trended in an east-west direction across the width of the site.

A third area with a characteristic pattern of opposing anomalies was found along the base of the tree-covered hill at the southern end of the site. Although the strength and variation of the magnetic readings are characteristic of a magnetic structure or object, it is believed that

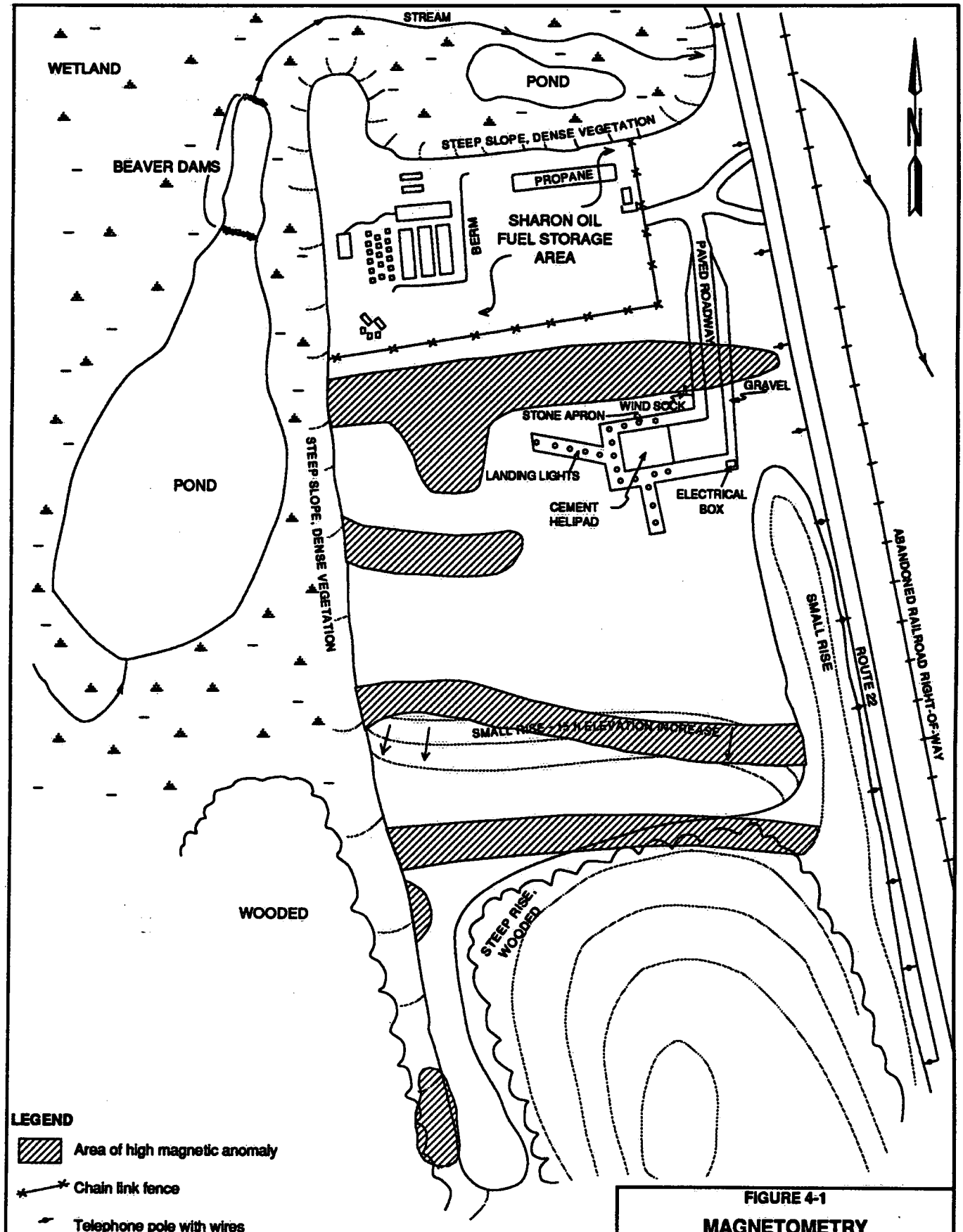

FIGURE 4-1

MAGNETOMETRY RESULTS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

LAWLER, MATUSKY & SKELLY ENGINEERS
Pearl River, New York

this pattern indicates the beginning of the fill zone. As stated previously, a very stable magnetic area believed to be associated with the presence of bedrock in this area was identified immediately south of this zone.

Two smaller areas had more localized signatures, indicating the presence of magnetic material. One area was located along the western side of the landfill at the beginning of the access road leading to the southern end of the landfill. This area was identified during the site reconnaissance as the apparent scrap metal depository area. Several car bodies, empty tanks, and drums are exposed at the edge of the fill area in this location. The concentration of metallic material is believed to be localized, as the contour interval from the magnetic survey is very steep and drops rapidly a short distance eastward. The second area, located along the access road near its southern end, was identified during the site inspection as the apparent drum disposal area. A significant number of partially exposed 55-gal drums were contained in the soil. No drums protruded from the several other mounds in the soil in this area.

Vertical electrical soundings (VES) were taken at five locations across the surface of the landfill (Table 4-1). VES 1 and VES 5 were taken along the eastern side of the landfill. VES 1 was located along the south side of the helipad; VES 5 was taken 200 ft farther south atop the elevated area. The results indicated the presence of three identifiable layers of comparable thicknesses in each location. The first two layers consisted of fill less than 10 ft thick with a layer of soil in between. The third layer was between 13 and 15 ft thick at both of the sounding locations. The dramatic increase in the resistivity values at the two sounding locations (three to five orders of magnitude) is believed to be caused by the bedrock surface. Outcrops were noted near VES 5, indicating that bedrock may be found at shallow depths in this area.

Sounding locations VES 2 and VES 4 were located in the central and western portions, respectively, of the landfill area south of the Sharon Oil fuel storage enclosure. These locations also consisted of three layers. Resistivity values of the materials at each sounding location decreased with depth. The thickness of the first identified layer was between 2.7 and 5.8 ft, which may be indicative of dry fill material or areas where less moisture is present in the upper zones. The second layer was more extensive and showed a marked decrease in

TABLE 4-1

GEOPHYSICAL RESULTS - VERTICAL ELECTRICAL SOUNDINGS

Old Amenia Landfill NYSDEC I.D. No. 314006

VES No.	LAYER	THICKNESS (ft)	APPARENT RESISTIVITY (ohm-m)
1	1 (surface)	6.1	8.12
	2	8.7	22.7
	3	-	5.6×10^3
2	1 (surface)	2.7	152
	2	22.8	18.4
	3	-	8.9
3	1 (surface)	9.0	55.5
	2	11.3	48.7
	3	-	15.2
4	1 (surface)	5.8	74.1
	2	38.0	17.8
	3	-	28.6
5	1 (surface)	8.6	22.6
	2	4.4	7.5
	3	-	1.81×10^5

resistivity at both locations. Thicknesses ranged between 22.8 and 38 ft for the second layer. This interval is believed to be composed of fill materials possibly moistened or saturated with conductive leachate. The third layer produced even lower resistivity values and had no identifiable maximum depth. There was nothing to distinguish the bottom of the fill area interface with unconsolidated materials or bedrock. The lower interval of the third layer, although difficult to determine, may be the lower limit of the fill materials at the site.

Although bedrock generally has greater resistivity (as encountered at sounding locations VES 1 and VES 5), the interface between fill and clay would be difficult to discern. Also, if unconsolidated materials beneath the fill are partially or fully saturated with low-conductivity leachate, resistivity values would decrease. The data indicate that this condition may exist at sounding locations VES 2 and VES 4.

VES 3 was located north of the Sharon Oil storage facility in the wooded peninsula area. Although the VES results indicated a three-layer system, the apparent resistivity measurements were similar for all layers. The upper layer was 9 ft thick and the second layer was 11.3 ft thick. The overall difference in resistivity between the two layers was less than 10 ohm-m. The decrease in resistivity may be a result of encountering unconsolidated materials with increasing moisture content.

4.4.3 Soil Gas Data

Soil gas points were installed throughout the site from the peninsula north of the Sharon Oil fuel storage area to the southernmost portion of the site along the access road leading to the drum disposal area. The sampling procedures employed for the soil gas survey are described in Section 3.4. The survey results generally indicate that VOCs were present at varying concentrations in the soil gas at a number of locations (Ref. 3). Results of the survey are summarized in Table 4-2 and areas of identified volatile organic contamination are shown in Figure 4-2.

The greatest concentration of contaminants was detected in samples obtained from the northeastern sector of the site in the area between the helipad and the Sharon Oil enclosure.

TABLE 4-2

SOIL GAS DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SG-1	SG-2	SG-3	SG-4	SG-5	SG-6	SG-7	SG-8	SG-9	SG-10	SG-11	SG-12
VOLATILE ORGANICS (µg/m³)												
Vinyl chloride	8,400	ND	ND	ND	ND	ND	*	3,100	ND	ND	ND	ND
Benzene	1,500	4,800	ND	ND	ND	300	*	4,900	ND	5,600	2,200	ND
PCE	27,000	1,300	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
Toluene	BDL	33,000	ND	ND	ND	1,400	*	3,300	5,400	15,000	3,700	2,000
Ethylbenzene	20,000	12,000	ND	ND	ND	6,700	*	7,900	ND	7,600	27,000	ND
m-Xylene	71,000	18,000	ND	ND	ND	11,000	*	15,000	ND	7,600	19,000	ND
o,p-Xylene	41,000	15,000	ND	ND	ND	7,600	*	19,000	ND	6,200	23,000	ND
Methylene chloride	ND	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
TCE	ND	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND
cis/trans-1,2-Dichloroethe	1,000	ND	ND	ND	ND	ND	*	ND	ND	ND	ND	ND

PARAMETER	SG-13	SG-14	SG-15	SG-16	SG-17	SG-18	SG-19	SG-20	SG-21	SG-22	SG-23	SG-24
VOLATILE ORGANICS (µg/m³)												
Vinyl chloride	ND	340,000	6,000	ND	ND	1,700	17,000	ND	6,600	12,000	28,000	21,000
Benzene	ND	38,000	9,700	ND	ND	8,900	33,000	ND	700	4,200	30,000	2,300
PCE	ND	79,000	ND	ND	ND	ND	ND	ND	ND	13,000	ND	ND
Toluene	1,300	1,700,000	8,800	1,600	1,000	5,300	26,000	400	1,200	3,500	25,000	2,100
Ethylbenzene	ND	560,000	11,000	ND	ND	46,000	21,000	ND	2,600	16,000	35,000	ND
m-Xylene	ND	1,100,000	16,000	ND	ND	72,000	36,000	ND	6,100	12,000	68,000	ND
o,p-Xylene	ND	730,000	17,000	ND	ND	55,000	42,000	ND	ND	20,000	46,000	ND
Methylene chloride	ND	6,300	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	14,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
TCE	ND	170,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
cis/trans-1,2-Dichloroethe	ND	440,000	ND	ND	ND	ND	67,000	ND	ND	8,500	ND	2,500
1,1-Dichloroethene	ND	3,400	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	ND	5,700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	ND	1,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

* - Not run, water encountered; no sample was obtained.
ND - Not detected at analytical detection limit (Ref. 3).
BD - Below detection limit

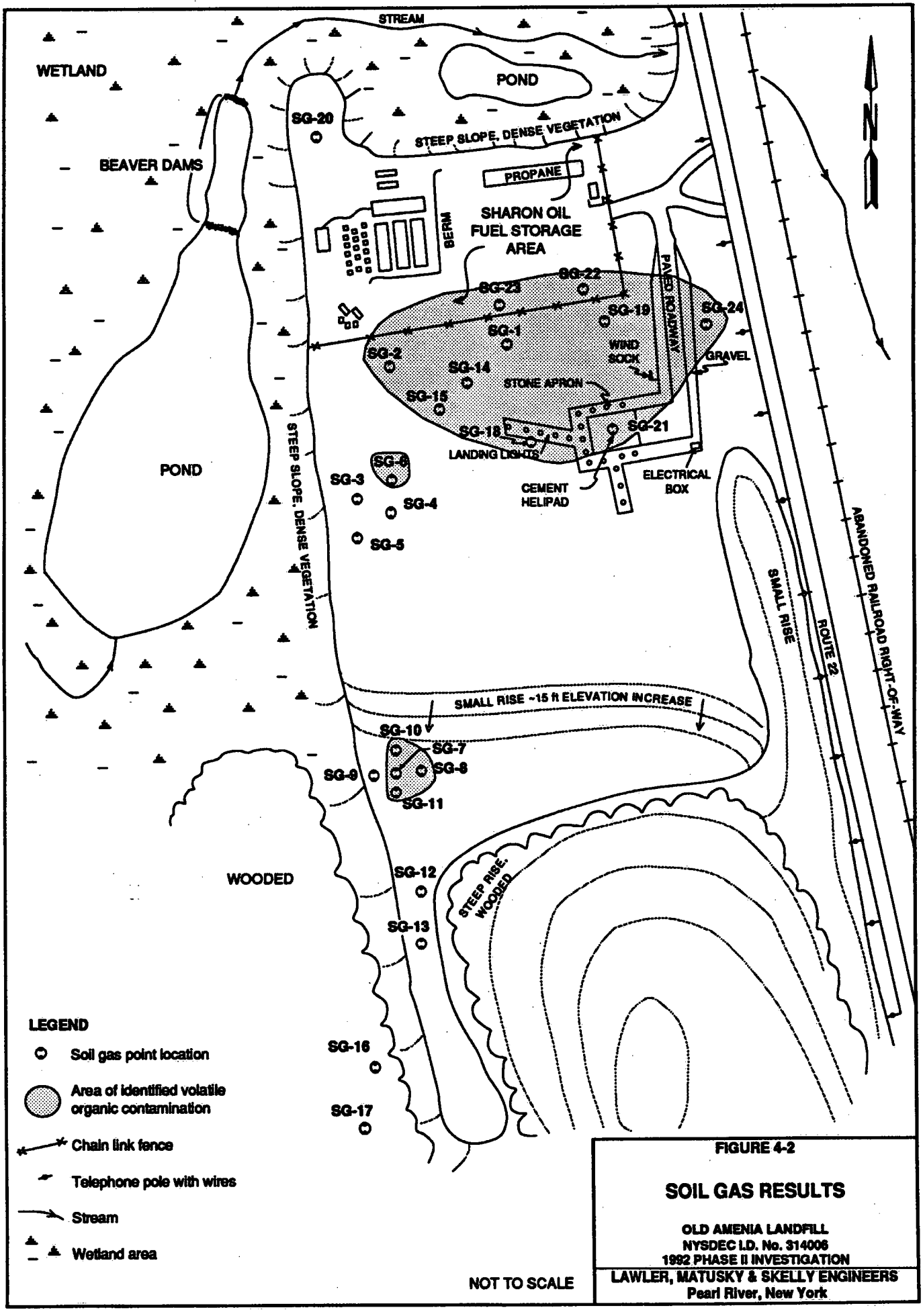

FIGURE 4-2

SOIL GAS RESULTS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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Ten soil gas sampling points were installed in this area, which was approximately 100 to 150 ft in diameter. Soil gas samples collected from nine of these 10 locations contained vinyl chloride in concentrations ranging from 1700 to 340,000 $\mu g/m^3$. Benzene, toluene, ethylbenzene, and xylene compounds (BTEX) were detected in nearly every sample from this area. Concentrations of the BTEX compounds varied between 300 and 1,7000,000 $\mu g/m^3$. Tetrachloroethylene (PCE) was identified in four closely grouped samples in this area, with concentrations of 1300 to 79,000 $\mu g/m^3$. Methylene chloride, 1,1,1-trichloroethane, and trichloroethylene were identified at a single location in this area at concentrations of 6300, 14,000, and 170,000 $\mu g/m^3$, respectively.

Five other areas on the property, primarily along the western side of the site, were also investigated. The first area is the peninsula north of the Sharon Oil enclosure, where only one point was installed (SG-20); 400 $\mu g/m^3$ of toluene was detected in the sample. As toluene is a common component of petroleum products, its presence in this area is most likely due to its proximity to the fuel storage tanks rather than to underlying VOC contamination. Samples SG-3 through -6 were grouped in an area on the western side of the site approximately halfway from the northern end. The ground surface in this area was characterized by a moderate depression that showed evidence of possible periods when standing water may have been present. Moderate concentrations of the BTEX compounds were detected in sample SG-6 only.

Five soil gas points were installed on top of the rise in the southwestern portion of the central site area. This location was marked by a very pronounced depression with definite signs of recent stagnant water. Sample point SG-7, installed at the bottom of the depression, contained water and therefore could not be sampled. Three of the remaining four points showed moderate concentrations of BTEX compounds. Sample SG-8 also contained 3100 $\mu g/m^3$ of vinyl chloride.

Two soil gas points were located in the scrap metal disposal area and at the drum burial location at the southern end of the site. Low concentrations of toluene were detected in all four of these samples. No other VOCs were present above the detection limits in these samples.

4.4.4 Surface Soil Data - Mobile Laboratory

Twenty soil samples were collected at the locations shown on Figure 3-3 and analyzed for PCBs by Tetra•K Testing using the mobile laboratory. In addition, the 10 samples with the highest detected PCB concentrations were analyzed by the mobile laboratory for TCL VOCs. The chemical data obtained for these soil samples are summarized in Table 4-3 (Ref. 3).

4.4.4.1 ***Volatile Organic Compounds.*** Of the 10 surface soil samples analyzed at the site for VOCs, only one showed evidence of VOC contamination. Ethylbenzene was detected at a concentration of 0.22 mg/kg in sample SS-5. All other VOCs tested for in the analysis were below detection limits in this sample.

4.4.4.2 ***PCBs.*** PCBs were detected in 15 of the 20 surface soil samples collected at the site and analyzed by the mobile laboratory. Aroclor 1248 was the PCB identified in 13 of the samples; the remaining two samples contained Aroclor 1254. The PCB concentrations detected ranged from 2.3 to 250 ppm; only one sample contained a PCB concentration of greater than 50 ppm.

4.4.5 Surface Soil Data - Fixed Laboratory

Surface soil samples for analysis in a fixed analytical laboratory were collected at the four locations shown on Figure 3-3. Sampling was conducted as described in Section 3.5.1. The chemical data for these samples are summarized in Table 4-4 and are discussed below (Ref. 19). The validation and usability assessment for all data from the fixed laboratory is discussed in the Data Usability Summary (Ref. 22) based on the Data Validation Report (Ref. 23).

4.4.5.1 ***Volatile Organic Compounds.*** The surface soil samples were analyzed using EPA Method 624. All samples collected contained low levels of methylene chloride; however, methylene chloride was also found in the associated method and trip blanks, indicating that it may have been the result of laboratory contamination rather than actual site contamination. 1,1,1-Trichloroethane was detected in only one sample (AMSS-20) at a level of 0.006 mg/kg,

TABLE 4-3

SURFACE SOIL FIELD DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SS-1A	SS-1B	SS-2A	SS-2B	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
VOLATILE ORGANICS (mg/kg)										
Ethylbenzene	ND	NR	ND	ND	NR	ND	0.220	ND	NR	NR
PCBs (mg/kg)										
Aroclor 1248	25	ND	12	250	ND	15	38	42	8.0	5.0
Aroclor 1254	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

PARAMETER	SS-9A	SS-9B	SS-10	SS-11A	SS-11B	SS-12	SS-13	SS14	SS15	SS16
VOLATILE ORGANICS (mg/kg)										
Ethylbenzene	ND	NR	ND	NR	NR	NR	NR	NR	ND	ND
PCBs (mg/kg)										
Aroclor 1248	35	6.0	10	4.5	ND	ND	ND	ND	8.2	46
Aroclor 1254	ND	4.2	ND	ND	2.3	ND	ND	ND	ND	ND

ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.

TABLE 4-4 (Page 1 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSS-17	AMSS-18	AMSS-19	RE AMSS-19
VOLATILE ORGANICS (mg/kg)				
Methylene chloride	0.011 b	0.015 b	0.016 b	NR
Tentatively Identified Compounds	ND	ND	ND	NR
SEMIVOLATILE ORGANICS (mg/kg)				
Benzoic acid	0.027 j	ND	NU	NU
Di-n-butylphthalate	0.370	0.140 j	NU	NU
Butylbenzylphthalate	0.010 j	ND	NU	NU
bis(2-Ethylhexyl)phthalate	0.100 j	0.260 j	NU	NU
Tentatively Identified Compounds				
Trichloro biphenyl isomer	3.740 (3) j	0.260 j	NU	NU
Tetrachloro biphenyl isomer	13.440 (10) j	0.200 j	NU	NU
Pentachloro biphenyl isomer	6.910 (6) j	0.350 (2) j	NU	NU
Hexachloro biphenyl isomer	0.750 j	ND	NU	NU
Unknown	ND	1.170 (3) j	NU	NU
Unknown + hexachloro biphenyl	ND	0.180 j	NU	NU
Unknown aromatic	ND	ND	NU	NU
Hexadecanoic acid	ND	ND	NU	NU

( ) - Number of compounds in total.
b - Found in associated blanks.
j - Estimated concentration; compound present below quantitation limit.
ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.
NU - Not usable; see Appendix A for explanation.
RE - Reextracted analysis.

TABLE 4-4 (Page 2 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	MS AMSS-19	MSD AMSS-19	AMSS-20
VOLATILE ORGANICS (mg/kg)			
Methylene chloride	0.019 b	0.019 b	0.019 b
1,1,1-Trichloroethane	0.004 j	0.004 j	0.006 j
SEMIVOLATILE ORGANICS (mg/kg)			
Benzoic acid	0.018 j	0.026 j	0.054 b
Di-n-butylphthalate	0.240 j	0.280 j	0.160 j
bis(2-Ethylhexyl)phthalate	0.041 j	0.050 j	4.100
Tentatively Identified Compounds			
Unknown	NR	NR	2.380 (7) j
Unknown aromatic	NR	NR	1.040 (3) j
Unknown acid	NR	NR	0.450 j
Unknown alkane	NR	NR	3.050 (4) j

( ) - Number of compounds in total.
b - Found in associated blanks.
j - Estimated concentration; compound present below quantitation limit.

MS - Matrix spike.
NR - Not run.
MSD - Matrix spike duplicate.

TABLE 4-4 (Page 3 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSS-17	AMSS-18	AMSS-19	MS AMSS-19	MSD AMSS-19	AMSS-20
PESTICIDES/PCBs (mg/kg)						
gamma-BHC (lindane)	ND	ND	ND	0.026	0.030	ND
Heptachlor	ND	ND	ND	0.026	0.032	ND
Aldrin	ND	ND	ND	0.026	0.030	ND
Dieldrin	ND	ND	ND	0.068	0.083	ND
Endrin	ND	ND	ND	0.064	0.077	ND
Endosulfan sulfate	ND	ND	ND	ND	ND	0.170
4,4'-DDT	ND	ND	ND	0.063	0.074	ND
Aroclor 1248	48.000 d	4.600 d	0.140	ND	ND	0.120

d - Concentration recovered from diluted sample (Ref. 19).
ND - Not detected at analytical detection limit (Ref. 19).
MS - Matrix spike.
MSD - Matrix spike duplicate.

TABLE 4-4 (Page 4 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSS-17	AMSS-18	AMSS-19	DUP AMSS-19	AMSS-20	NATIVE SOIL CONCENTRATIONS TYPICAL RANGE (n)
METALS (mg/kg)						
Aluminum	11,200	13,400	17,900	17,051	23,100	10,000 - 300,000
Antimony	9.1 B	11.8 B	15.5	13.3 B	19.1	0.6 - 10
Arsenic	6.7 SA R	5.8 SA R	8.3 SA R	5.0 R	8.2 SA R	1.0 - 40
Barium	39.4 B	54.6	45.8	43.5 B	68.7	100 - 3,500
Beryllium	0.56 B	0.45 B	0.45 B	0.56 B	1.0 B	0.1 - 40
Cadmium	ND	ND	ND	ND	ND	0.01 - 7.0
Calcium	32,500	25,400	5,250	5,330	715 B	100 - 400,000
Chromium	13.2	16.1	19.6	17.9	59.6	5.0 - 3,000
Cobalt	16.5	19.2	23.4	20.6	18.9	1.0 - 40
Copper	35.7 E	35.3 E	32.8 E	30.1	62.6 E	2.0 - 100
Iron	34,800	40,300	38,500	39,000	41,700	7,000 - 550,000
Lead	60.6	91.1	38.6	37.6	164	2.0 - 200
Magnesium	18,700	20,400	12,700	11,400	8,400	600 - 6,000
Manganese	971 R	1,210 R	1,300 R	1,000 R	950 R	100 - 4,000
Mercury	ND	ND	ND	ND	ND	0.01 - 0.08
Nickel	41.6	33.9	39.3	40.3	41.6	5.0 - 1,000
Potassium	1,360	1,250	2,070	2,010	1,270 B	400 - 30,000
Selenium	ND N W	ND N W	ND N W	ND	ND N	0.1 - 2.0
Silver	ND N	ND N	ND N	ND	ND N	0.1 - 5.0
Sodium	ND	ND	ND	ND	ND	750 - 7,500
Thallium	ND N W	ND N W	ND N W	ND	ND N W	0.1 -0.8 (q)
Vanadium	17.0	18.2	27.5	25.5	33.5	20 - 500
Zinc	137 E	204 E	93.7 E	86.7	119 E	10 - 300
Cyanide	90.0 N d	123.1 N d	2.8 N	2.8	1.5 N	-

(n) - Ref. 20.
(q) - Ref. 21.
d - Concentration recovered from diluted sample (Ref. 19).
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
E - Indicates a high percent difference on serial dilution.
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
W - Post-digestion spike out of control limits; sample absorbance is less than 50% of spike absorbance.
ND - Not detected at analytical detection limit (Ref. 19).
SA - Value determined by the method of standard addition.
DUP - Duplicate sample analysis.

TABLE 4-4 (Page 5 of 5)

SURFACE SOIL DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSS-17	AMSS-18	AMSS-19	MS AMSS-19	MSD AMSS-19	AMSS-20	HAZARDOUS CRITERIA AND EP TOX STANDARDS
EP TOX ORGANICS (mg/l)							
Endrin	<0.01	<0.01	<0.01	NR	NR	<0.01	0.02
Lindane	<0.01	<0.01	<0.01	NR	NR	<0.01	0.4
Methoxychlor	<1.0	<1.0	<1.0	NR	NR	<1.0	10.0
Toxaphene	<0.01	<0.01	<0.01	NR	NR	<0.01	0.5
2,4-D	<1.0	<1.0	NU	NR	NR	<1.0	10.0
2,4,5-TP3 (Silvex)	<0.1	<0.1	NU	NR	NR	<0.1	1.0
EP TOX METALS (mg/l)							
Arsenic	ND	ND	ND	NA	ND	ND	5.0
Barium	0.176B	0.218 B	0.0664 B	NA	0.0664 B	0.401 B	100
Cadmium	ND	ND	ND	NA	ND	ND	1.0
Chromium	ND	ND	ND	NA	ND	ND	5.0
Lead	0.022 B	ND	ND	NA	ND	ND	5.0
Mercury	ND	ND	ND	NA	ND	ND	0.2
Selenium	ND	ND	ND	NA	ND	ND	1.0
Silver	ND N	ND N	ND N	NA	ND N	ND N	5.0
HAZARDOUS CHARACTERISTICS							
Corrosivity (inches/year)	<0.01	<0.01	<0.01	NR	NR	<0.01	0.25+
Flash point	>212	>212	>212	NR	NR	>212	-
Reactivity to cyanide (ppm)	<1	<1	<1	NR	NR	<1	250
Reactivity to sulfide (ppm)	<1	<1	<1	NR	NR	<1	500

\+ - The rate of corrosivity of steel at 131°F as determined by the NACE test.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
N - Spiked sample recovery is not within control limits.
MS - Matrix spike.
NA - Not applicable.
ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.
NU - Not usable; see Appendix A for explanation.
MSD - Matrix spike duplicate.

which is below the contract-required quantitation limit (CRQL). No other TCL VOCs or tentatively identified compounds (TICs) were detected in the soil samples collected at the site.

4.4.5.2 ***Semivolatile Organic Compounds.*** Several phthalate acid ester (PAE) compounds were identified in the soil samples. Di-n-butylphthalate was detected in AMSS-17 at a concentration of 0.37 mg/kg. The concentrations of this compound in the other three samples collected were estimated at 0.14 to 0.28 mg/kg, below the CRQL. Butylbenzylphthalate, detected in only one sample (AMSS-17), was found at a concentration below the CRQL. All four soil samples contained detectable concentrations of bis(2-ethylhexyl)phthalate; however, only one sample (AMSS-20) had a concentration of bis(2-ethylhexyl)phthalate above the CRQL.

TICs were most prevalent in sample AMSS-17. This sample contained an estimated concentration of 13.44 mg/kg of tetrachloro-biphenyl isomers as well as estimated concentrations of trichloro- (3.740 mg/kg), pentachloro- (6.910 mg/kg), and hexachloro- (0.75 mg/kg) biphenyl isomer compounds. Sample AMSS-18 also contained concentrations of these chlorinated biphenyls below the CRQL, except for the hexachloro-biphenyl isomer, which was not detected. Several unknown semivolatile organics were present in three of the four soil samples (AMSS-18, -19, and -20) at levels below the CRQL. Sample AMSS-20 contained three unknown aromatic compounds at an estimated total concentration of 1.04 mg/kg as well as an unknown acid compound and four unknown alkane compounds at estimated concentrations of 0.45 and 3.05 mg/kg, respectively, all below the CRQL.

4.4.5.3 ***Pesticides/PCBs.*** No pesticides were identified in any of the soil samples from the site with the exception of 0.17 mg/kg of endosulfan sulfate in sample AMSS-20. Aroclor 1248 was detected in all four soil samples at concentrations ranging from 0.12 to 48.0 mg/kg. However, the Aroclor 1248 concentrations in samples AMSS-17 and -18 (48.0 and 4.6 mg/kg, respectively) were obtained from the analysis of samples that were diluted 50:1 and 10:1, respectively.

4.4.5.4 ***EP Toxicity.*** Extraction procedure (EP) toxicity analyses for both metals and organics were performed on all four soil samples. The results indicated that the EP toxicity

concentrations for all organics tested were below compound detection limits. For metals, none of the samples had concentrations above the maximum allowable levels, i.e., 100 times the drinking water standard for that particular metal. The only metals detected in the EP toxicity test were present below the contract-required detection limit; barium was identified in all four samples and lead was present in sample AMSS-17. Silver was not detected in any of the samples; however, the matrix spike (MS) sample recovery for silver was 56%, indicating that the results may be biased slightly low.

4.4.5.5 ***Hazardous Characteristics***. In addition to the chemical analyses, analyses for hazardous characteristics, including corrosivity, ignitability, reactivity to cyanide, and reactivity to sulfide, were conducted on the samples. According to the tests, none of the samples exhibited hazardous characteristics. Corrosivity and reactivity to cyanide and sulfide were below measurable levels for all four samples. The flash point of each of the four samples was greater than 212°F.

4.4.5.6 ***Metals***. Metals concentrations were compared with typical concentration ranges for native soils. Soil samples AMSS-18, -19, and -20 contained slightly elevated levels of antimony; the antimony concentration determined for sample AMSS-18 was below the contract-required detection limit. All four samples had elevated levels of magnesium, with concentrations ranging from 8400 mg/kg to 20,400 mg/kg. Typical native soil concentrations for magnesium range from 600 to 6000 mg/kg. All other metals detected were within the typical concentration ranges for native soils.

4.4.6 Surface Water Data

Five surface water samples were collected at the locations shown on Figure 3-3. All sampling locations and methods were discussed with and approved by NYSDEC personnel before sampling proceeded, as discussed in Section 3.5.2. The samples were analyzed for VOCs, semivolatile organics, pesticides, PCBs, metals, cyanide, and conventional parameters, which included pH, specific conductance, chemical oxygen demand (COD), total dissolved solids (TDS), and total suspended solids (TSS). Five additional surface water samples were collected at each sampling location and submitted to Aquatec for low-level PCB analyses.

Table 4-5 summarizes the chemical data for the surface water samples obtained from the Old Amenia Landfill site (Ref. 19). The surface water samples were collected from the pond and stream located in the wetland area adjacent to the site, which has been designated as a Class C surface water body by NYSDEC. The standards applicable to Class C surface water bodies are included in Table 4-5, and the analytical data obtained were compared with these standards.

4.4.6.1 ***Volatile Organic Compounds.*** Methylene chloride was detected at low levels, i.e., below the CRQL, in three of the water samples; it was also detected in an associated blank, however, and is therefore attributed to laboratory contamination. Acetone was identified in three of the samples and in the associated blanks. No TICs were detected.

4.4.6.2 ***Semivolatile Organic Compounds.*** The only TCL semivolatile organics identified in the surface water samples were n-nitrosodiphenylamine and bis(2-ethylhexyl)phthalate. The former was detected in three samples at levels below the CRQL; however, it was also detected in the method blank, indicating laboratory contamination. bis(2-Ethylhexyl)phthalate was detected in only one sample, at a concentration of 1 µg/l, which is below the CRQL. bis-(2-Ethylhexyl)phthalate is a known laboratory contaminant and is not considered to be the result of environmental contamination at the site. Several unknown TICs were detected in samples AMSW-01, -03, and -05 at concentrations below the CRQL. However, the field blank associated with these samples also contained low levels (22.1 µg/l) of unknown TICs, indicating that they are not the result of environmental contamination at the site.

4.4.6.3 ***Pesticides/PCBs.*** No pesticides were detected in any of the surface water samples collected from the wetlands area adjacent to the site. PCBs were not detected in the samples analyzed by Nytest (detection limits of 0.5 µg/l for Aroclor 1254 and 1.0 µg/l for Aroclor 1260). Aquatec performed low-level PCB analyses of the surface water samples (detection limit is 0.05 µg/l for Aroclor 1242): a concentration of 0.06 µg/l was detected in sample AMSW-03; PCBs were not detected in the remainder of the samples.

4.4.6.4 ***Metals.*** Iron levels in all surface water samples except AMSW-04 exceeded the NYSDEC standard of 300 µg/l for Class C surface waters. Values ranged from 363 to 776

TABLE 4-5 (Page 1 of 3)

SURFACE WATER DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSW-0	AMSW-02	AMSW-03	AMSW-04	AMSW-06	MS AMSW-06	MSD AMSW-06	FIELD BLANK	TRIP BLANK	NYSDEC SW CLASS C STANDARDS (n) AQUATIC	NYSDEC SW CLASS C STANDARDS (n) HUMAN
VOLATILE ORGANICS (µg/l)											
Methylene chloride	ND	3 b j	26 j	ND	2 b j	4 b j	6 b	ND	2 j	NS	NS
Acetone	13 b	11 b	ND	ND	10 b	14 b	22 b	ND	ND	NS	NS
Tentatively Identified Compounds	ND	ND	ND	ND	ND	ND	ND	ND	ND	-	-
SEMIVOLATILE ORGANICS (µg/l)											
n-Nitrosodiphenylamine(¶)	2 b j	2 b j	2 b j	ND	ND	ND	ND	ND	NR	NS	NS
bis(2-Ethylhexyl)phthalate	ND	1 j	ND	ND	ND	ND	ND	ND	NR	0.6	NS
Benzo(b)fluoranthene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Benzo(k)fluoranthene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Benzo(a)pyrene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	0.0012 GV	NS
Indeno(1,2,3-cd)pyrene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Dibenz(a,h)anthracene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Benzo(g,h,i)perylene	ND	ND	ND	ND #	ND #	ND	ND	ND #	NR	NS	NS
Tentatively Identified Compounds											
Unknown	53.5 (2) j	ND	29 (2) j	ND	8.5 j	NR	NR	22.1 (2) j	NR	-	-
PESTICIDES/PCBs[1] (µg/l)	ND	ND	ND	ND	ND	ND	ND	ND	NR	-	-
CONVENTIONALS											
pH (standard units)	7.62	7.71	7.67	7.78	7.71	NR	NR	NR	NR	6.5 - 8.5	6.5 - 8.5
Specific conductance (µmhos/cm)	420	403	391	377	396	NR	NR	NR	NR	NS	NS
Chemical oxygen demand (mg/l)	17*	73	<3	17*	17*	NR	NR	NR	NR	NS	NS
Total dissolved solids (mg/l)	243	255	235	271	250	NR	NR	NR	NR	NS	NS
Total suspended solids (mg/l)	5	9	17	5	4	NR	NR	NR	NR	NS	NS

\# - Concentrations may exceed detection level; see Appendix A for complete discussion.
* - COD values should be considered estimates (biased high) as the absorbances for these values correlate with the 10 ppm standard.
(¶) - Cannot be separated from diphenylamine.
( ) - Number of compounds in total.
(h) - Hardness: 215 mg equivalent CaCO3/l.
1 - Nytest's analytical detection limits for PCB were 0.5 and 1.0 µg/l (Aroclors 1254 and 1260, respectively).

b - Found in associated blanks.
j - Estimated concentration; compound present below quantitation limit.
MS - Matrix spike.
ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.
NS - No standard.
GV - Guidance value.
MSD - Matrix spike duplicate.

TABLE 4-5 (Page 2 of 3)

SURFACE WATER DATA SUMMARY (NOVEMBER 1991)
Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSW-01	AMSW-02	AMSW-03	AMSW-04	AMSW-06	DUP AMSW-05	FIELD BLANK	NYSDEC SW CLASS C STANDARDS (h)
METALS (µg/l)								
Aluminum	78.2 B	86.2 B	57.4 B	ND	ND	45.6 B	ND	100(i)
Antimony	ND	ND	ND	ND	ND	ND	ND	NS
Arsenic	ND W	ND	ND	ND	ND	ND	ND	190
Barium	ND	ND	ND	ND	ND	ND	ND	NS
Beryllium	ND	ND	ND	ND	ND	ND	ND	1100
Cadmium	ND	ND	ND	ND	ND	ND	ND	2.07
Calcium	54,100	53,400	53,000	52,800	53,200	53,800	ND	NS
Chromium	ND	ND	ND	ND	ND	ND	ND	367
Cobalt	ND	ND	ND	ND	ND	ND	ND	5.0
Copper	ND	ND	2.8 B	ND	2.8 B	ND	ND	22.7
Iron	776	503	363	290	400	409	ND	300
Lead	ND	ND	ND	ND	ND	ND	ND	6.48
Magnesium	20,100	19,900	19,800	19,700	19,700	20,000	ND	NS
Manganese	134	86.7	101	62.7	81.2	81.6	ND	NS
Mercury	0.26	ND	ND	ND	ND	ND	ND	0.20 GV
Nickel	ND	ND	ND	ND	ND	ND	ND	171
Potassium	3,180 B	3,140 B	3,290 B	2,650 B	2,570 B	2,530 B	ND	NS
Selenium	ND	ND	ND	ND	ND	ND	ND	1.0
Silver	ND	ND	ND	ND	ND	ND	ND	0.1 (i)
Sodium	5,780	5,250	5,190	4,910 B	5,060	5,030	ND	NS
Thallium	ND W	ND W	ND W	ND W	ND W	ND	ND	6.0
Vanadium	ND	ND	ND	ND	ND	ND	ND	14
Zinc	4.5 B	8.4 B	ND	ND	ND	ND	ND	30
Cyanide	ND	ND	ND	ND	ND	ND	ND	5.2 (f)

(f) - Free cyanide, sum of HCN + CN^-.
(h) - Hardness: 215 mg equivalent CaCO3/l.
(i) - Ionic.
B - Value is less than the contract-required detection limit but greater than the instrument detection limit.

W - Post-digestion spike out of control limits; sample absorbance is less than 50% of spike absorbance.
GV - Guidance value.
ND - Not detected at analytical detection limit (Ref. 19).
NS - No standard.
DUP - Duplicate sample analysis.

TABLE 4-5 (Page 3 of 3)

SURFACE WATER DATA SUMMARY (NOVEMBER 1991)

AQUATEC DATA RESULTS

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	AMSW-01	AMSW-02	AMSW-03	AMSW-04	AMSW-05	MS AMSW-05	MSD AMSW-05	NYSDEC SW CLASS C STANDARDS (h) AQUATIC	HUMAN
LOW-LEVEL PCBs (µg/l)									
Aroclor 1242	ND	ND	0.060	ND	ND	ND	ND	0.001	NS

(h) - Hardness: 215 mg equivalent CaCO3/l.
MS - Matrix spike.
ND - Not detected at analytical detection limit (Aquatec's low-level PCB analytical detection limit was 0.05 µg/l).
NS - No standard.
MSD - Matrix spike duplicate.

µg/l. No other metals were detected in the surface water samples at levels that exceeded the applicable NYSDEC standards.

4.4.7 Sediment Data

Sediment samples were collected at locations corresponding to each of the five surface water samples (Figure 3-4). These samples were analyzed for VOCs, semivolatile organics, metals, cyanide, pesticides, and PCBs. Table 4-6 summarizes the analytical data obtained for the sediment samples (Ref. 19).

4.4.7.1 ***Volatile Organic Compounds.*** Methylene chloride was found at low concentrations in all of the sediment samples collected. However, as it was also detected in the trip and method blanks associated with these samples, this compound was most likely introduced through laboratory contamination and is not related to site contamination. Acetone was identified in one sample, SD-05, at a concentration of 0.15 mg/kg. Although this compound was not detected in the field, trip, or method blanks, its presence is probably due to laboratory contamination as acetone is a common laboratory contaminant. There were no TICs detected in any of the sediment samples.

4.4.7.2 ***Semivolatile Organic Compounds.*** Nitrobenzene was detected in only one sample, SD-03, at a concentration of 4500 mg/kg. Although semivolatile organic compounds were not detected in any of the other sediment samples, actual concentrations of several semivolatile compounds may be biased low due to poor (low) internal standard recoveries for these compounds. Low levels of these contaminants may have been present in the samples analyzed, but none were detected.

All five sediment samples contained low levels (below the CRQL) of unknown TICs; however, several of these compounds are suspected aldol condensation products. Thus, the source of these compounds is most likely laboratory contamination rather than actual site contamination. The only other TICs detected were found in sample SD-03, which had 2.0 mg/kg of a chloro-biphenyl isomer and 7.4 mg/kg of two dichloro-biphenyl isomers.

TABLE 4-6 (Page 1 of 2)

SEDIMENT DATA SUMMARY (NOVEMBER 1991)

Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SD-01	SD-02	SD-03	SD-04	SD-05	MS SD-05	MSD SD-05
VOLATILE ORGANICS (mg/kg)							
Methylene chloride	0.029 b	0.051 b	0.022 b	0.089 b	0.026 b	0.034 b	0.028 b
Acetone	ND	ND	ND	ND	0.150	0.200	0.120
Tentatively Identified Compo	ND	ND	ND	ND	ND	NR	NR
SEMIVOLATILE ORGANICS (mg/kg)							
Nitrobenzene	ND	ND	4,500	ND	ND	ND	ND
Benzo(b)fluoranthene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Benzo(k)fluoranthene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Benzo(a)pyrene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Indeno(1,2,3-cd)pyrene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Dibenz(a,h)anthracene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Benzo(g,h,i)perylene	ND #	ND #	ND #	ND #	ND #	ND #	ND #
Tentatively Identified Compounds							
Unknown	54.0 j a	92.0 j a	32.0 j a	150 j a	50.0 j a	NR	NR
Unknown	9.4 j	54.0 (2) j	ND	9.40 (2) j	3.20 (2) j	NR	NR
Chloro-biphenyl isomer	ND	ND	2.0 j	ND	ND	NR	NR
Dichloro-biphenyl isomer	ND	ND	7.4 (2) j	ND	ND	NR	NR
PESTICIDES/PCBs (mg/kg)							
Aroclor 1232	ND	ND	18.0	ND	ND	ND	ND
Aroclor 1248	0.510	1.80	5.20	ND	ND	ND	ND

\# - Concentrations may exceed detection level; see Appendix A for complete discussion.
( ) - Number of compounds in total.
a - Suspected aldol condensation product.
b - Found in associated blanks.
j - Estimated concentration; compound present below quantitation limit.

MS - Matrix spike.
ND - Not detected at analytical detection limit (Ref. 19).
NR - Not run.
MSD - Matrix spike duplicate.

TABLE 4-6 (Page 2 of 2)

SEDIMENT DATA SUMMARY (NOVEMBER 1991)
Old Amenia Landfill NYSDEC I.D. No. 314006

PARAMETER	SD-01	SD-02	SD-03	SD-04	SD-05	DUP SD-05
METALS (mg/kg)						
Aluminum	10,800	22,600	10,900	17,600	9,810	9,050
Antimony	48.4	24.5 B	22.3	60.3 B	25.7 B	21.1 B
Arsenic	8.4 N SA	8.2 N SA	5.3 N	16.7 N SA	4.7 N SA	6.4
Barium	74.8 B	118 B	44.3 B	105 B	51.3 B	47.5 B
Beryllium	3.6	2.2 B	0.60 B	ND	0.91 B	0.91 B
Cadmium	ND	ND	3.8	ND	ND	ND
Calcium	5,410	20,100	37,200	25,800	6,660	6,470
Chromium	9.7	25.6	15.7	25.9	13.4	11.1
Cobalt	64.3	38.5	17.7	43.4 B	26.9	27.5
Copper	ND	28.5	40.2	32.8 B	9.8 B	6.4 B
Iron	128,000	79,500	37,800	60,600	51,400	55,100
Lead	23.4 SA	49.6 SA	71.4	70.8 SA	19.1 SA	22.8
Magnesium	6,610	9,930	21,000	8,900	5,280	4,803
Manganese	2,890 R	1,170 R	692 R	969 R	1,320 R	973 R
Mercury	ND N	ND N	ND N	5.4 N	1.3 N	1.4
Nickel	144	88.5	43.8	81.8	53.5	62.5
Potassium	1,640 B	2,280 B	1,180 B	2,890 B	1,260 B	1,121 B
Selenium	ND	ND	ND W	ND W	ND W	ND
Silver	ND	ND	ND	ND	ND	ND
Sodium	ND	ND	ND	ND	ND	ND
Thallium	ND W	ND W	ND W	ND	ND W	ND
Vanadium	17.3 B	38.4	17.8	32.0 B	15.8 B	13.8 B
Zinc	347	284	253	245	142	145
Cyanide	ND N	ND N	ND N	ND N	ND N	ND N

B - Value is less than the contract-required detection limit but greater than the instrument detection limit.
N - Spiked sample recovery is not within control limits.
R - Duplicate analysis not within control limits.
W - Post-digestion spike out of control limits; sample absorbance is less than 50% of spike absorbance.

ND - Not detected at analytical detection limit (Ref. 19).
SA - Value determined by the method of standard addition.
DUP - Duplicate sample analysis.

4.4.7.3 ***Pesticides/PCBs.*** Aroclor 1248 was detected in sediment samples SD-01, -02, and -03 at concentrations of 0.51, 1.8, and 5.2 mg/kg, respectively. In addition, Aroclor 1232 was identified in sample SD-03 at a concentration of 18.0 mg/kg. No other pesticides or PCBs were detected in the sediment samples.

4.4.7.4 ***Metals.*** A number of metals were detected in the sediment samples collected at the site. Native concentration ranges for metals in sediments are not available, and no standards applicable to sediments are currently available. Aluminum was present in all sediment samples at levels ranging from 9810 to 22,600 mg/kg. Antimony was detected from below the contract-required detection limit to 48.4 mg/kg. Arsenic was detected at concentrations of 4.7 to 16.7 mg/kg; however, the spiked sample recovery for these samples was not within control limits, indicating that these levels are estimated concentrations. A concentration of 3.6 mg/kg of beryllium was detected in sample SD-01; all other samples had beryllium concentrations lower than the contract-required detection limit. Only sample SD-03 contained cadmium, at a concentration of 3.8 mg/kg. Calcium was detected in the five samples at concentrations ranging from 5410 to 37,200 mg/kg. Chromium concentrations ranged from 9.7 to 25.9 mg/kg. Cobalt was present at levels from below the contract-required detection limit to 64.3 mg/kg.

Copper was detected in samples SD-02 and -03 at concentrations greater than the contract-required detection limit: 28.5 and 40.2 mg/kg, respectively. The iron levels in the sediment samples ranged from 37,800 to 128,000 mg/kg. Lead was also present in all five samples, at levels from 19.1 to 71.4 mg/kg. Manganese concentrations ranged from 692 to 2890 mg/kg. Mercury was detected in samples SD-04 and -05; however, the spiked sample recovery for these samples was not within control limits. All sediment samples contained nickel, at concentrations ranging from 43.8 to 144 mg/kg. Vanadium was present at concentrations above the contract-required detection limit in samples SD-02 and -03 only, with concentrations of 38.4 and 17.8 mg/kg, respectively. Zinc was present in all five samples at levels ranging from 142 to 347 mg/kg.

All other metals were present at levels below the contract-required detection limit or the instrument detection limit.

4.5 CONCLUSIONS

4.5.1 Geophysics Survey

Several conclusions may be drawn from the results of the magnetometry and electrical resistivity studies conducted at the site. The former landfill area appears to be located in the central portion of the site, excluding the peninsula north of the Sharon Oil fuel storage enclosure and the access road leading to the drum disposal area at the southern end of the site. The landfill contains a substantial amount of fill material that is magnetic. Materials located at depth within the former landfill area may consist of refuse, unconsolidated deposits saturated with lower conductive leachate, or unsaturated clay. Depth to groundwater may be greater than the level of the adjacent wetlands area; this would increase the conductivity, as was apparent in layer 3 of sounding location VES 4.

Several areas of the site exhibited magnetic field patterns indicative of large concentrations of buried metallic materials (Figure 4-1). As the information collected provides no depth or size correlation for these areas, it is difficult to identify those locations that may contain the largest amount of buried material. One magnetic anomaly spanned the site in a relatively wide swath between the helipad and the Sharon Oil enclosure, indicating that a relatively large amount of buried materials may be present in this area.

According to the geophysics survey results, bedrock is relatively shallow at the southwestern end of the site - approximately 15 ft below grade - and along the eastern portion of the landfill.

4.5.2 Soil Gas Survey

The soil gas survey located three areas with substantial VOC contamination, as shown on Figure 4-2. When evaluated in conjunction with the geophysics survey data, the areas of identified VOC contamination appear to correlate well with the locations of suspect magnetic anomalies. Comparison of the geophysics and soil gas data indicates the presence of a

possible drum burial zone in the central site area between the helipad and the Sharon Oil enclosure, extending across the width of the site.

The existence of this zone is supported by aerial photographs of the site taken in April 1970 and April 1990 (Plate). The photos show the landfill as it appeared during the period of suspected industrial waste dumping and as it is now. In the earlier photo most of the site has been filled to approximately the present grade level, with the exception of a large area in the vicinity of the current Sharon Oil property. This portion of the site appears to be the active landfill area at the time. A comparison of shadows on the photo at the edge of the fill area with shadows of vehicles present at the site indicates that the face is approximately 10 to 20 ft high. Immediately south of the steep grade and active landfill area is a bermed area approximately 150 by 250 ft that appears to contain large quantities of organized, stacked drums. If in fact some or all of these drums were disposed of on-site, the most likely area would be in the active landfill portion apparent in the aerial photo, as the other portions of the site had already been brought to approximately the current grade level. The geophysics survey indicates that this area is the location of a very prominent magnetic anomaly. In addition, results of the soil gas survey have identified this portion of the site as an area of high VOC concentrations. Consequently, this location should be the focus of future site investigations, such as test pits or subsurface sampling.

4.5.3 Surface Soils

Results of the mobile laboratory analyses conducted on the 20 surface soil samples confirm the presence of PCB contamination at the site. Fifteen of the 20 samples contained detectable concentrations of PCBs, with concentrations ranging from 2.3 to 250 mg/kg, substantially above the PCB standard of 50 ppm for toxic wastes as defined by the Toxic Substances Control Act (TSCA). The 250-ppm concentration was detected in sample SS-2B collected from the northwestern side of the site near the end of the Sharon Oil enclosure fence. This is near the location of a 1987 NUS Corporation sample that contained an Aroclor 1248 concentration of 170 ppm. Two other samples taken from the western bank of the landfill in this vicinity, SS-6 and -16, had PCB concentrations of 42 and 46 mg/kg, respectively. The remainder of the samples showing PCB contamination were collected on

the northern and central portions of the western bank of the site, with concentrations below 50 mg/kg. Results from samples analyzed by the mobile laboratory indicated that the PCB contamination did not appear to extend to the southern portion of the site along the access road leading to the drum disposal area.

The soil samples analyzed in the fixed laboratory did detect low levels of PCBs in the southern portion of the site. Sample AMSS-20, collected from the drum disposal area at the southwestern end of the access road, had 0.12 mg/kg of PCBs; sample AMSS-19, collected at the top of the rise in the southwestern portion of the central site area, contained 0.14 mg/kg. The other two soil samples collected for analysis in the fixed laboratory showed higher PCB concentrations. These samples were collected along the western bank of the site in the central and northern sections. The highest concentration detected by the fixed analytical laboratory was 48 mg/kg for sample AMSS-17, which was collected at the western end of the Sharon Oil enclosure fence in the area of the high PCB concentrations detected by the mobile laboratory.

Although these results confirm the presence of PCB contamination at the site, its extent and depth have not been defined. The range of PCB concentrations (5-250 ppm) detected and the widespread nature of the contamination indicate that it is most likely from PCB-contaminated oils spilled or disposed of at the site rather than from disposal of pure PCB product. Results of the literature search indicate that large quantities of what was reported to be cutting oil were handled at the site. The majority of the soil samples showing PCB contamination were collected along the western slope of the landfill; however, PCB contamination may exist in other areas of the site as well. In addition, all samples collected were surface soil samples from the first 6 in. of soil. Substantial PCB contamination may exist at greater depths.

Surface soil samples collected at the site did not show detectable levels of VOC contamination; however, the soil gas survey found moderate to high levels of VOCs present in the soil gas. These results may be explained by the high mobility of VOCs in soils. Volatile constituents in the surface soils are likely to have volatilized into the atmosphere or migrated to subsurface soils or groundwater. Thus, soil borings and/or groundwater

monitoring would be required to locate the source of the VOCs. The relatively high levels of VOCs detected in the soil gas indicate the likelihood of a substantial source of subsurface contamination.

4.5.4 Surface Water/Sediment

Substantial volatile and semivolatile organic contamination was not detected in the surface water/sediment samples collected from the wetlands area adjacent to the site. Pesticide and metals contamination also did not appear to be significant in the surface water and sediments. PCBs, however, were detected in three of the sediment samples and in one surface water sample, indicating that PCBs are migrating from the site to the adjacent wetlands and have entered the surface water. Thus, PCB contamination does present a potential threat to aquatic life.

4.6 RECOMMENDATIONS

The results of this Phase II investigation of the Old Amenia Landfill site showed PCB contamination in 15 of 20 soil samples collected, at concentrations ranging from 2.3 to 250 mg/kg. In addition, PCB contamination was detected in three of five sediment samples and one of five surface water samples obtained from the wetlands area adjacent to the site. The New York State Division of Fish and Wildlife has concluded that these levels of PCBs indicate widespread contamination of significance to wildlife. Therefore, the Old Amenia Landfill has been classified as a Class 2 site (Ref. 24).

Based on the information obtained in this investigation, a remedial investigation (RI) of the Old Amenia Landfill is warranted. The goals of the RI should be to fully delineate the extent and magnitude of contamination present, assess the degree and rate of migration of contaminants from the site, and evaluate the threat posed to human health and the environment by the contamination. Activities to be conducted as part of the RI should include additional soil sampling, installation of test trenches, implementation of a groundwater monitoring program, and biomonitoring of aquatic species in the adjacent wetlands. These activities are described in greater detail in the following sections.

4.6.1 Soil Sampling

Additional soil sampling should be conducted to fully delineate the extent and magnitude of PCB contamination at the site. Samples should be collected in the areas of high concentrations of PCBs identified during the previous investigations. In addition, samples should be obtained from 6 to 8 ft deep to determine whether greater contamination exists beneath the surface. All PCB samples collected to date have been surface soil samples collected from 0 to 6 in. PCB-contaminated materials may have been dumped onto soils that were later covered by a foot or more of clean fill; thus, greater PCB contamination may be encountered with depth at the site. Soil samples obtained from borings should be observed for oil stains; PCB analyses of those samples with visible signs of oil may confirm that the source of the PCBs was contaminated oil as opposed to pure PCB product. Subsurface soil sampling may also serve to locate the source of the VOC contamination identified in the soil gas samples obtained at the site.

4.6.2 Test Trenches

Test trenches should be installed to locate buried drums, confirm the disposal of industrial wastes, and identify the source of VOC and PCB contamination at the site. Five preliminary test trench locations are proposed (Figure 4-3) based on an evaluation of the geophysics and soil gas data. Two test pits are recommended in the central site area between the helipad and the Sharon Oil enclosure as the largest identified magnetic anomaly was located in this area. The highest VOC concentrations detected in the soil gas were also obtained in this area, indicating that a contaminant source such as buried drums may be present at this location. One test pit is recommended for the base of the small rise on the southwestern side of the central site area, at the western end of the magnetic anomaly located in this area. Although no soil gas data were obtained for this immediate area, moderate concentrations of VOCs were detected in soil gas samples obtained at the top of the rise.

Two more test pits are recommended in the southern portion of the site. One trench should be located near the scrap metal disposal area at the northern end of the access road leading to the drum disposal area. The purpose would be to investigate the small magnetic anomaly

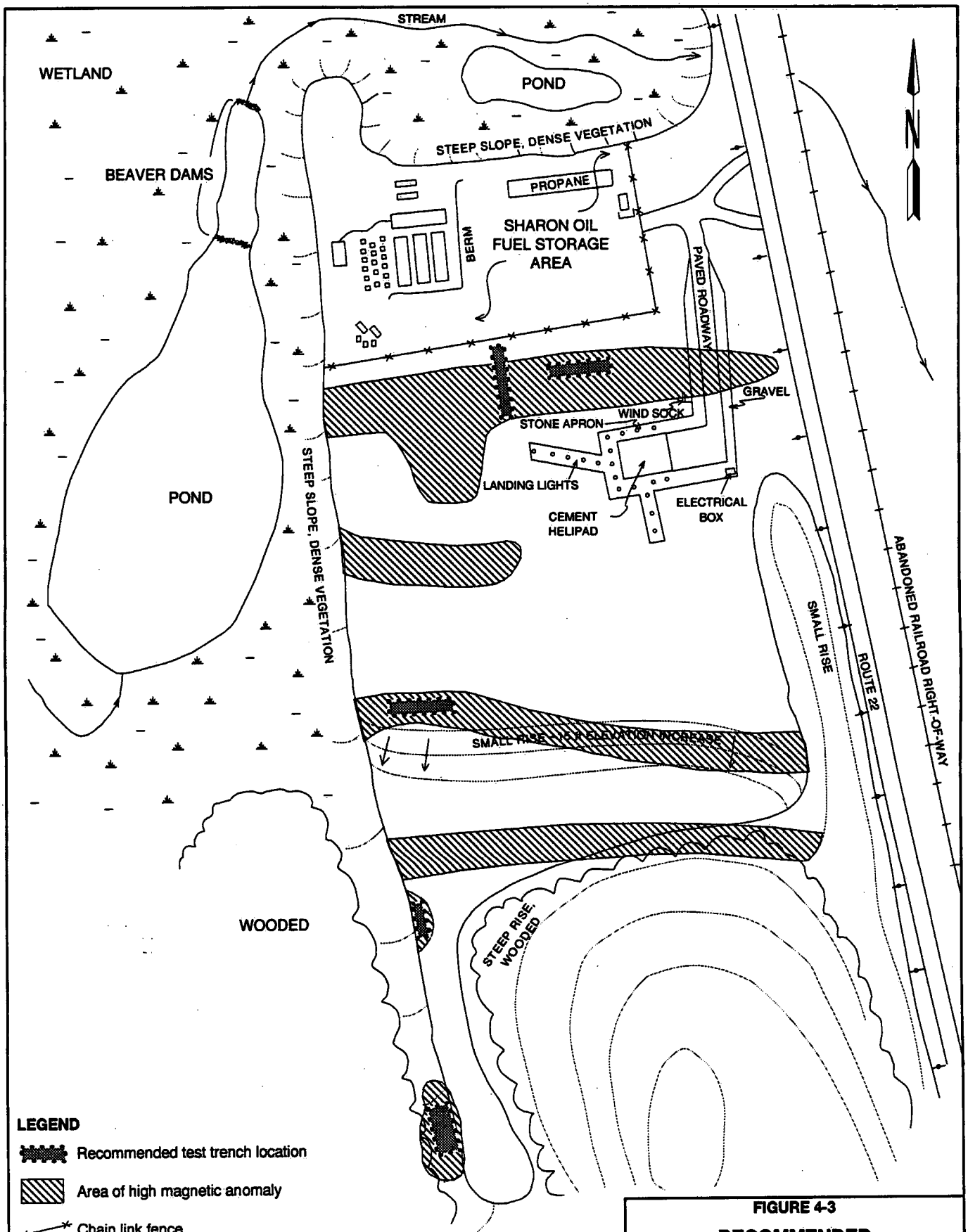

FIGURE 4-3

RECOMMENDED TEST TRENCH LOCATIONS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

LAWLER, MATUSKY & SKELLY ENGINEERS
Pearl River, New York

at this location. The other test pit should be located in the drum disposal area to determine the condition of the drums and whether any of the drums contain industrial wastes that can be sampled.

The test pits should be excavated to a maximum depth of 25 ft and continued horizontally as required to attempt to determine the number of buried drums existing at the site. Any drums or waste masses encountered will be sampled for full TCL organics and metals, full EP toxicity, reactivity, corrosivity, ignitability, and possibly TCLP. The trenches will then be backfilled and graded level after sampling. The results of the test trench investigation will be used to determine whether an interim remedial measure (IRM) should be performed at the site. The purpose of the IRM would be to excavate any buried drums on-site that are acting as contaminant sources and thereby eliminate the continued release of contaminants to the environment.

4.6.3 Groundwater Monitoring

Implementation of a groundwater monitoring program is recommended to determine whether the contamination present at the site has impacted the underlying aquifer and whether contaminants are migrating from the site in the groundwater. In particular, the detection of relatively high levels of VOCs in the soil gas at the site indicates the potential for VOC contamination of the underlying aquifer. One upgradient well should be installed to provide representative background samples. A minimum of three downgradient wells should be installed to monitor groundwater flow as well as water quality in the underlying aquifer (Figure 4-4). The monitoring wells should be located based on the results of the Phase II investigation, including the geophysics survey and environmental sampling, and should be installed so as to provide pertinent data on site stratigraphy and groundwater regime. A site survey will also be necessary as part of the groundwater monitoring program.

Before any monitoring wells are installed, LMS recommends the installation of a geotechnical boring to identify the immediate site stratigraphy. The boring should be located in the vicinity of one of the downgradient monitoring wells and should be sampled continuously into the water table. Soil samples should be examined for physical characteristics, including color,

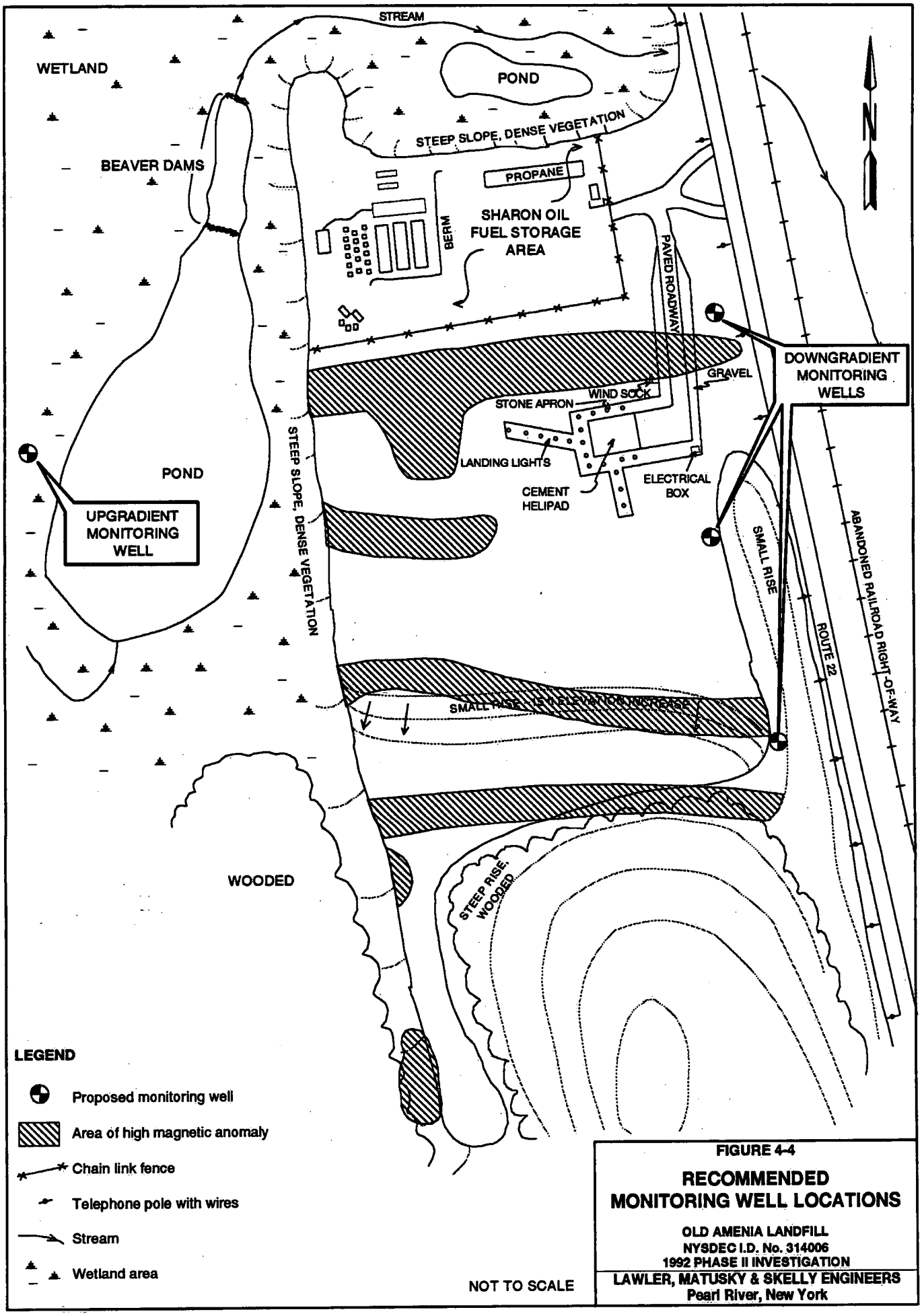

FIGURE 4-4

RECOMMENDED MONITORING WELL LOCATIONS

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

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Pearl River, New York

texture, grain size, angularity, relative moisture content, permeability, and depositional source. Also, each sample should be screened using an OVA and/or PID. Samples showing signs of contamination during field screening should be archived for possible chemical analysis. The boring should be advanced into the saturated zone until bedrock or impermeable strata are encountered or until a maximum depth of 80 ft is reached. It is estimated that groundwater may be encountered 20 to 30 ft below the landfill surface. This water may be related to a perched zone and, if an impermeable stratum exists below this water, it will be important to identify its limit. Bedrock is expected to be encountered at relatively shallow depths in certain areas at the site (south and southeast). Other site areas may contain a substantially thicker blanket of unconsolidated material.

If a less permeable layer is encountered, LMS recommends installing a screened monitoring well to that depth. If bedrock is encountered, the monitoring well should be installed as a screened sampling point at the borehole overburden interface. If neither an impermeable layer nor bedrock is encountered, the boring should be continued to 80 ft, where a solid PVC riser should be installed. A downhole conductivity probe (EM-39) should be used to determine the interval with the greatest conductivity change. The results will show the depth of the greatest concentration of conductive leachate.

Following completion of the geophysics boring and analysis of the collected data, the actual depth at which the wells should be screened can be determined. Any remaining wells should be installed in a similar stratum. As stratigraphic conditions over a large distance may be dissimilar, it may be necessary to determine the depth in the field.

Recommended locations for three downgradient monitoring wells are along the expected downgradient side of the landfill (east). Although the overall groundwater flow pattern in this area is expected to be to the east, the elevated rise that has relatively shallow bedrock at the southern end of the site may induce a northerly component of flow off the slope. It may also be necessary to install a group of deeper wells to detect heavier compounds such as vinyl chloride.

There are several potential locations for the upgradient well. One is the central region of the swamp west of the site. Installation of a well at this location would need to be facilitated by a floating barge rig. If this is not feasible, an upgradient well located west of the site and wetlands area may be necessary. Although not an optimum location because of the overall distance between the wells, the well would provide background water quality samples.

After completion, each well would be developed by pumping and surging or by the air-lift method. Following well development and subsequent sampling, each monitoring well would be slug tested to determine the horizontal hydraulic conductivity of the screened strata. If the monitoring wells are installed on the surface of unconsolidated bedding, which is considered to have greatly increased permeability from each boring, LMS would recommend collecting a Shelby tube sample. These samples would be submitted for triaxial vertical permeability testing to determine the effectiveness of this layer in preventing vertical migration.

4.6.4 **Biomonitoring Program**

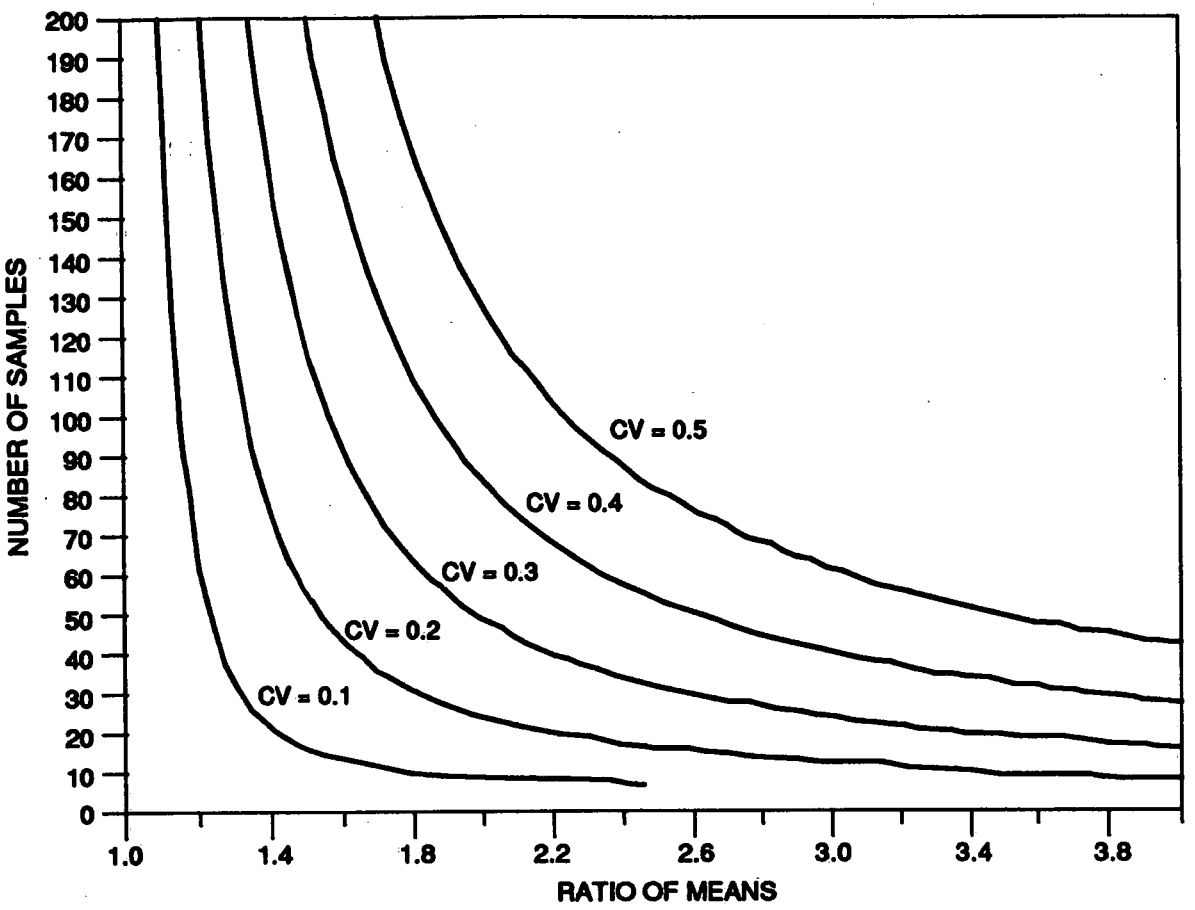
Because of the PCB contamination in the sediments and surface water at the site, LMS recommends a biomonitoring program to determine the extent of bioaccumulation of PCBs in aquatic organisms in the wetlands adjacent to the site. An uncontaminated upstream community must be identified for the program; northwest of the site there is a potentially appropriate lake from which the stream flows.

A cost-effective biomonitoring program requires a two-stage approach. In the first stage a limited number of sample organisms (10 to 15) of up to three species would be collected from both the upstream, background location and the potentially impacted area. (Depending on the size of the organism and the sample size requirement for the analyses to be performed, more than one organism may be required to constitute a sample.) The samples would be analyzed for PCBs and the results reviewed to determine the nature of the second stage of the program.

The results from the first stage should provide information on the background levels of PCBs, the extent of variability in PCB concentrations among individual organisms, and the percent difference (if any) in the mean PCB concentrations between the background and potentially impacted organisms. The most appropriate species can then be selected for the second stage of the biomonitoring program. A species that appears to be bioaccumulating PCBs and that demonstrates a lesser degree of variability among individual organisms should be selected. The preliminary study can be used to determine the number of samples required to demonstrate with a given degree of confidence (α and ß levels) a statistically significant difference between the upstream and downstream organisms. For example, if a 20% difference between the mean upstream and downstream sample PCB concentrations is considered adequate to show a positive impact by the site on aquatic life, and the coefficient of variability (CV) determined in the preliminary study for a particular species is 0.30 (30%), the number of sample organisms required at a 95% confidence level (α=0.05, ß=0.10) would be 65 (Figure 4-5).

Two-stage biomonitoring facilitates an evaluation, based on preliminary data, of the degree of difference between background and potentially impacted organisms that is adequate to positively attribute bioaccumulation of PCBs in adjacent aquatic life to site contamination. Based on this evaluation, the number of sample organisms required to provide statistically significant results to make this determination can be obtained from Figure 4-5. In this way initial costs of the biomonitoring program are reduced and the overall costs are minimized through selection of an appropriate number of sample organisms. In addition, the state can review the preliminary data obtained to determine the degree of confidence and associated costs desirable for the second phase of the program.

In the initial stage of the biomonitoring program, the on-site pond and upstream lake may be electrofished to obtain the sample organisms. Up to three species present in sufficient abundance (e.g., crayfish, bullheads, or minnows) can then be selected for collection. As the pond is a relatively contained area, any species of fish present may be selected. In open rivers where fish may migrate from one area to another, using fish as the test species may not be appropriate; however, at this site fish would be preferable.



CV - Coefficient of variation

α - Probability of a Type I error (say there is a difference when there is none -- consequence is remediation where none is needed)

β - Probability of a Type II error (say there is no difference when there really is -- consequence is no remediation at a site that needs it)

FIGURE 4-5

NUMBER OF SAMPLES REQUIRED TO DETECT DIFFERENCE AT α=0.05, β=0.10, AND VARIOUS COEFFICIENTS OF VARIATION

OLD AMENIA LANDFILL
NYSDEC I.D. No. 314006
1992 PHASE II INVESTIGATION

LAWLER, MATUSKY & SKELLY ENGINEERS
Pearl River, New York

Additional surface water and sediment sampling is also recommended in conjunction with the biomonitoring program to further delineate the extent of contamination in this area. Also, contaminant concentrations detected in surface waters and sediments may be used in applicable mathematical models to predict the extent of bioaccumulation in aquatic life.

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[1] Memo documenting interview of 26 November 1991 with Gerald Wilcox, longtime town resident, concerning past site activities. [Appendix B]

[2] Lawler, Matusky & Skelly Engineers (LMS). 1991. Site inspection report.

[3] Tetra•K Testing. 1991. Soil gas survey report.

[4] Letter to Michael Komoroske, NYSDEC, from Sandra L. Foose, EPA Region II, regarding NUS Corporation sampling data for Old Amenia Landfill. 12 September 1990. [Appendix B]

[5] Lawler, Matusky & Skelly Engineers (LMS). 1991. Sampling report.

[6] Lawler, Matusky & Skelly Engineers (LMS). 1991. Health and safety plan.

[7] Newspaper clipping from the *Harlem Valley Times*. 23 June 1970.

[8] Dutchess County Department of Health (DCDOH). Memo to David Ruff from C.H. Wright regarding presence of drums containing industrial wastes at the site. 1 July 1970.

[9] Letter to Salvatore Surico from David Ruff, Senior Sanitarian, DCDOH, regarding spillage of industrial wastes on ground at site. 23 October 1970.

[10] Dutchess County Department of Health (DCDOH) memo to Henry W. Scoralick from David Ruff regarding Surico refuse disposal site. 26 October 1970. [Appendix B]

[11] New York State Department of Environmental Conservation (NYSDEC) written confirmation of verbal communication between Jerry Wilcox, local resident, and Michael Komoroske regarding history of Old Amenia Landfill. 7 September 1990.

[12] New York State Department of Environmental Conservation (NYSDEC) Receptor Effects of Air Contamination Source from William McEnroe regarding Amenia Landfill site. 21 April 1971.

[13] Dutchess County Department of Health (DCDOH) memo to file from Ellis W. Adams, Assistant Project Director, regarding Surico Landfill. 27 April 1971.

[14] New York State Department of Environmental Conservation (NYSDEC) written confirmation of verbal communication between Karl Saliter, site owner, and Michael Komoroske regarding access to site. 6 September 1990.

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(Continued)

[15] New York State Department of Environmental Conservation (NYSDEC) Refuse Disposal Area Inspection Reports for Amenia Landfill completed by E.W. Adams, DCDOH. 17 February 1972, 30 July 1973, 5 September 1973, 2 October 1973, 4 February 1974.

[16] Gerber, J.G. 1982. Water Resources Study for Dutchess County. Final Report. Dutchess County Department of Planning.

[17] Simmons, E.T., I.G. Grossman, and R.C. Health. 1961. Groundwater resources of Dutchess County, New York. U.S. Geological Survey and New York Water Resources Commission. Bulletin GW-43. Albany, NY.

[18] INTEX. 1991. Geophysical survey report for Old Amenia Landfill site.

[19] Aquatec Inc. and Nytest Environmental, Inc. 1991. Analytical data package.

[20] Dragun, J. 1988. *The Soil Chemistry of Hazardous Materials*. Silver Spring, MD: The Hazardous Materials Control Research Institute. pp. 77, 79.

[21] Bowan, H.J.M. 1979. *Environmental Chemistry of the Elements*. New York: Academic Press Inc. pp. 60-61.

[22] Lawler, Matusky & Skelly Engineers (LMS). 1991. Data usability summary. [Appendix A]

[23] Data Validation Services. 1992. Data validation report.

[24] New York State Department of Environmental Conservation (NYSDEC), memo to Daniel Eaton, Bureau of Hazardous Site Control, from Richard Koeppicus, Bureau of Environmental Protection, Division of Fish and Wildlife, regarding Phase II investigation of Old Amenia Landfill. 26 August 1992. [Appendix B]

LIST OF SUPPORTING DOCUMENTATION

I REFERENCE DOCUMENTATION

Newspaper clipping from the *Harlem Valley Times*. 23 June 1970. [Ref. 7]

Dutchess County Department of Health (DCDOH). Memo to David Ruff from C.H. Wright regarding presence of drums containing industrial wastes at the site. 1 July 1970. [Ref. 8]

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Bowan, H.J.M. 1979. *Environmental Chemistry of the Elements*. New York: Academic Press Inc. pp. 60-61. [Ref. 21]

II SUBCONTRACTOR OR SUBCONSULTANT REPORTS

II.i Geophysics Survey [Ref. 18]
II.ii Soil Gas Survey [Ref. 3]
II.iii Data Validation Report [Ref. 23]
II.iv Analytical Data Package [Ref. 19]

III HEALTH AND SAFETY PLAN [Ref. 6]

IV SITE INSPECTION REPORT [Ref. 2]

V SAMPLING REPORT [Ref. 5]

APPENDIX A

DATA USABILITY SUMMARY

DATA USABILITY SUMMARY

The final report from Data Validation Services concluded that the samples collected from the Old Amenia Landfill site (I.D. No. 314006) and analyzed by Aquatec Inc. for low-level PCBs were in compliance with Analytical Services Protocol (ASP December 1989). The remaining analyses, conducted by Nytest Environmental, Inc., were in compliance with the following exceptions:

Volatile Organic Compounds

- VOC continuing calibration standards (CCS) contained components with percent differences (%D) exceeding 35%, causing all of the VOC data, with the exception of sample AMSW-05, to be noncompliant.
- The matrix spike blank associated with sediment samples AMSD-01 through AMSD-05 had percent recoveries outside the allowable 75 to 125% range. Additionally, the initial calibration standards associated with these samples were not processed in consecutive order, causing these VOC analyses to be noncompliant.
- The method blank associated with AMSW-04 contained a tentatively identified compound (TIC) at a level exceeding 10% of the nearest internal standard, causing the VOC analysis for this sample to be noncompliant.

Base/Neutral Acid Extractables

- The BNA matrix spike blanks produced percent recoveries outside the allowable 75 to 125% range, causing all of the BNA results to be noncompliant.
- The BNA CCS contained components with percent differences exceeding 25%, causing AMSW-01, -02, and -03; AMSS-17, -18, -19, and -20; AMSD-01, -02, -03, -04, and -05 to be noncompliant.
- The BNA instrument performance indicates that some components could not be detected at the required contract-required quantitation limit (CRQL), causing AMSW-04 and -05; AMSD-01, -02, -03, -04, and -05; and the field blank to be noncompliant.
- The BNA analysis of samples AMSW-04 and the field blank produced slightly elevated surrogate recoveries; reextraction of these samples was not performed as required and therefore the data are noncompliant.

- The initial analysis of AMSS-19 resulted in nonmatrix-related surrogate failure, and reextraction of this sample occurred well outside the required holding time, causing the data for both analyses to be noncompliant.

Pesticides/PCBs

- The pesticide/PCB aqueous matrix spike blank produced percent recoveries outside the allowable 75 to 125% range, causing AMSW-01, -02, -03, -04, and -05 and the field blank to be noncompliant.

- Samples AMSD-04 and -05 were analyzed for pesticides/PCBs at a 1:5 dilution without evidence of matrix or target compound chromatographic contribution, causing the data to be noncompliant.

After reviewing the data report and the validator's report, LMS concluded the following with respect to the noncompliant data:

Volatile Organic Compounds

- The continuing calibration standards percent difference components outside the required limit do not directly affect the reported data. Fluctuations in operating conditions of the gas chromatograph (GC), as well as temperature variations, can affect the CCS. The exceedances noted in the validator's report are not significant and therefore do not affect the overall usability of the reported VOC results.

- The matrix spike blank associated with the sediment samples produced two recoveries just below the allowable limit of 75%. However, as these suppressed recoveries are common for the matrix spike blank, the overall usability of the data is unaffected. Additionally, the improper processing of the initial calibration standards associated with these samples did not significantly alter the reported results and does not affect the final usability of the data.

- The reporting of a TIC at a level exceeding 10% of the nearest internal standard in the method blank associated with AMSW-04 does not affect the data usability.

Base/Neutral Acid Extractables

- The matrix spike blank violations that caused the BNA data to be noncompliant were not significant and therefore do not affect the overall usability of the data.

- The semivolatile CCS for this data package contained components with %Ds above 25% and, as indicated in the validator's report, do not affect the sample results as reported. Therefore, the final data usability is unaffected.

- The data affected by poor instrument performance, as indicated by the standards processed on 17 and 18 December 1991, should be qualified as estimated, as stated in the validator's report. These data are usable with the appropriate qualifications.

- Samples AMSW-04 and the field blank had slightly elevated surrogate recoveries that were noncompliant and should have been reextracted and reanalyzed; however, the failures were not significant and do not affect the data usability.

- The reextraction and reanalysis of the BNA fraction for AMSS-19 was performed 18 days outside the required extraction time. The reported data from the original extract and reextracted analyses were found to be noncompliant and unusable.

Pesticides/PCBs

- The matrix spike blank violation causing samples AMSW-01 through -05 and the field blank to be noncompliant appears to be the result of improper spiking, as discussed in the data validator's report, and therefore does not affect the data usability.

- The dilution of samples AMSD-04 and -05 may have caused low-level target compounds to be diluted out without evidence of matrix or target compound chromatographic contribution. These results are usable but the data are qualified to indicate that the absence of low-level contaminants cannot be substantiated.

The validator found the remaining data compliant with NYSDEC's 1989 ASP. Several other issues that could affect data usability were also reviewed by LMS. The results of that review are presented below.

The reported data for 2-butanone (reported as "ND") should be considered estimated because of poor recovery in the initial and continuing calibration standards. Methylene chloride, detected at 26 µg/l in AMSW-03, was not reported by the laboratory; this omission was subsequently corrected. The surrogate associated with extraction procedure (EP) toxicity herbicide analysis of AMSS-19 did not recover (0%). There can be no confidence that the reported results (ND) are accurate; therefore, the reported data for 2,4-D and 2,4,5-TP

(Silvex) are unusable. The surface soil samples are qualified to indicate that the cyanide results are potentially elevated because the matrix spike recovery was 218%; the sediment samples are qualified to indicate that the cyanide results are potentially depressed because the matrix spike associated with the sediments recovered at only 12%. The EP toxicity silver results are reported with an "N" qualifier as the spike matrix recovery (56%) is outside the control limits. The qualifier was added to the summarized data to indicate that the reported results are possibly biased low. A transcription error for the reported total dissolved solids (TDS) value (245 mg/l) for AMSW-03 was corrected to 235 mg/l in the summary report. The chemical oxygen demand (COD) values for AMSW-01, -04, and -05 are qualified as biased high because the COD absorbances were almost the same as that of the 10 mg/l standard.

Overall, the results of LMS' data usability review concluded that the BNA and the EP toxicity herbicide results for sample AMSS-19 are unusable. However, the results of the matrix spike performed on AMSS-19 can be used to determine the concentrations of nonspiked BNA compounds present in the original sample. The remainder of the data submitted for the Old Amenia site are usable with the appropriate qualifiers, as indicated in Data Validation Services' final report.

APPENDIX B

PERTINENT FILES OR RECORDS

REFERENCE 1

(A)

INTERVIEW ACKNOWLEDGEMENT FORM

Site Name: Amenia Landfill, Route 22, South Site

I.D. Number: 314006

Person Contacted: Mr. Gerald Wilcox

Affiliation: Long-time resident of area,
Manager of Amenia Sand & Gravel, Inc.

Address: P.O. Box C
Amenia, NY 12501

Phone: (914) 373-8151

Person Making Contact: Sara Handy, LMS Engineers

Type of Contact: In person

Date: November 26, 1991

Interview Summary:

Also in attendance at the interview was Roy Budnik of Roy T. Budnik & Associates, Inc., consultant for the owner of the site (John Segalla, owner of Amenia Sand & Gravel). Mr. Budnik has been conducting a literature and deed search regarding the sources and location of contamination at the site as well as potential liability for site conditions. Provided to LMS by Mr. Budnik (as attached) were a property ownership summary and copies of the attendant deeds, an historical summary of operations at the site as compiled by Budnik & Assoc. from their file review and from Mr. Wilcox, and aerial photographs of the site for 1970 and 1990. The latter were obtained from the Dutchess County Real Property Tax Office.

Operation of the Amenia landfill was very controversial in the Town of Amenia in the late 1960's and early 1970's. The owner, Ben Surico, reportedly intended to bring in waste from other counties (i.e., Westchester and Putnam, which were looking for additional disposal sites at that time as their existing landfills were approaching maximum capacity) for disposal at the Amenia landfill site. Some Town Council members supported this plan while others were opposed.

The Amenia landfill was frequently cited by the Dutchess County

Department of Health (DCDOH) for unsatisfactory operation, beginning in the 1940's and continuing until closure of the landfill in 1976. Conditions at the site included blowing papers, uncovered piles of trash, and unauthorized burning, and was generally considered to be a nuisance by local residents. However, during the period of operation/ownership of the site by Surico, these problems were remedied. The Town Supervisors were pleased with Surico for meeting the requirements of the DCDOH, so they were tolerant of the drums of industrial wastes being stored on site. The aerial photo for this period shows approximately 200 drums present on the site in a bermed area. Drums were placed in an area of the site not visible from Route 22; Mr. Wilcox indicated that they were somewhat visible from the access road leading to the general dumping area.

Based on Mr. Budnik's review of files concerning the site and Mr. Wilcox's memory of what was common knowledge at that time in the Town of Amenia concerning the landfill, industrial wastes were present at the site from December 1968 to April 1971, during Surico's ownership of the property. Mr. Wilcox had no personal knowledge of the types of industrial wastes that may have been stored at or disposed of on site, the procedures for handling drums at the landfill, or the source of the wastes, as he was not present at the site. (Mr. Wilcox was an officer with the NY State Police in Dover Plains during this period.) His only personal experience concerning the landfill in this period was driving past the landfill on a Sunday morning behind a truck carrying drums, which turned into the site. A spray of petroleum compounds coming from the truck hit his windshield. He could not provide any further information regarding this incident, such as any company names on the truck or the drums. The only other information he could provide regarding the possibility of industrial waste disposal at this site is that Mr. Surico is believed to have been connected with a Joseph Fierello of Poughkeepsie, NY, who had ties to Jersey City, NJ, where Mr. Wilcox believes the drums may have come from.

Mr. Wilcox provided the names of the following town residents or officials who might be able to provide additional information concerning the landfill:

- Caroline McEnroe: Justice for Town of Amenia during this period (1968-1971), currently works for Dutchess County.
- Paul Thompson: Town Supervisor during this period (1968 to 1971), currently a Justice for the Town, lives on Depot Hill Rd.
- H. Bertram Miller: Former Postmaster for Town of Amenia.

- George Butz, Sr.: Long-time area resident, currently lives in Wassaic.

Acknowledgement:

I have read the above transcript and I agree that it is an accurate summary of the information verbally conveyed to the LMS interviewer, or as I have revised below, is an accurate account.

Revisions:

_____
_____
_____
_____
_____
_____
_____
_____

Signature: _____ Date: _____

REFERENCE 4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION II
EDISON, NEW JERSEY 08837

SEP 12 1990

RECEIVED

Mr. Michael Komoroske
NYDEC
Division of Hazardous Waste Remediation
50 Wolf Road, Room 218
Albany, New York 12233-7010

Dear Mr. Komoroske:

Per our conversation on September 10, 1990, pertaining to the Amenia Site, Amenia, New York, the following is enclosed: the sampling trip report, the sample location map, and the analytical data.

If you have any questions, please contact me at 201-906-6808.

Sincerely,

Sandra L. Foose, Environmental Engineer
Superfund Support Section

Attachments

02-8612-11

02-8612-11-STR

SAMPLING TRIP REPORT

SITE NAME: Amenia Site (Route 22 South)

TDD #: 02-8612-11

SAMPLING DATE: February 25, 1987

EPA CASE NO: 6888

1. Site Location: See Figure 1

2. Sampling Locations: See Figure 2

3. Sample Descriptions: See Table 1

4. Laboratories Receiving Samples:

Sample Type	Name and Address of Laboratory
Organics (Aqueous and Soil)	Clayton Environmental Consultants, Inc. 22345 Roethel Drive Novi, Michigan 48050
Inorganics (Aqueous and Soil)	Versar, Inc. 6850 Versar Center Springfield, VA 22151

5. Sample Dispatch Data:

Organic soil and aqueous samples were shipped by FIT personnel via Federal Express under Airbill No. 495160702 to Clayton Environmental Consultants, Inc. on 2/25/87 at 1830 hours.

Inorganic soil and aqueous samples were shipped by FIT personnel via Federal Express under Airbill No. 495164353 to Versar, Inc. on 2/25/87 at 1830 hours.

6. Sampling Personnel

Name	Organization	Duties on Site
Gary Bielen	NUS Corp. - FIT II	Project Manager, Documentation
Jane Bullis	NUS Corp. - FIT II	Site Safety Officer
John Ducar	NUS Corp. - FIT II	Sample Management
Dan deBruijn	NUS Corp. - FIT II	Sampler
Roberta Riccio	NUS Corp. - FIT II	Sampler/Decon

7. Weather Conditions:

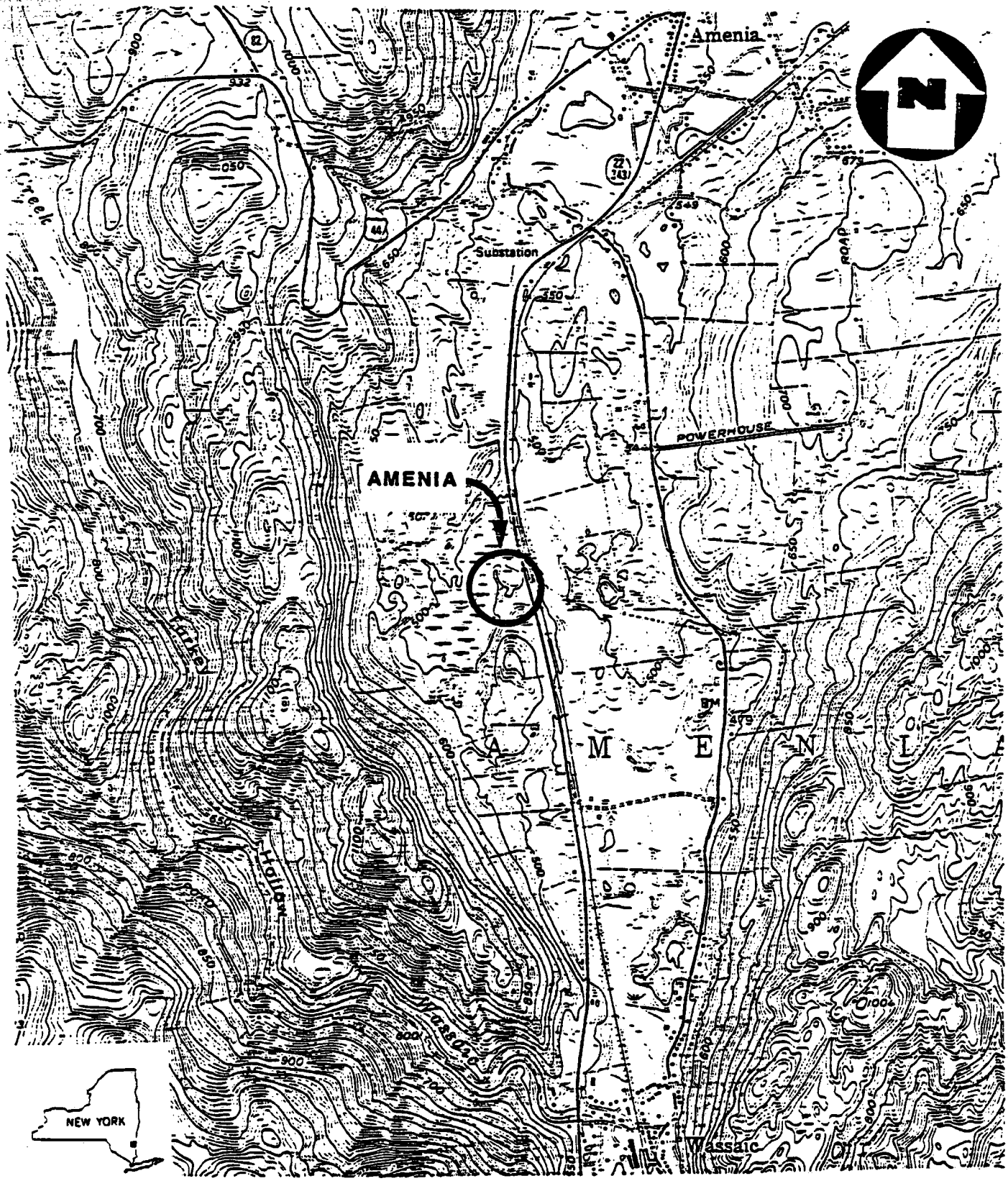
Sunny, 35°F, wind 0-2 mph.

8. Additional Comments:

All samples collected during this investigation will be analyzed for Hazardous Substance List (HSL) Parameters. A total of thirteen (13) environmental samples were collected from the site. Four (4) soil, three (3) surface water and three (3) sediment samples were collected onsite. Three (3) groundwater tap samples were collected off-site. One aqueous QA/QC blank was obtained from the EPA laboratory in Edison, New Jersey and was shipped with the environmental samples. Sample packaging and shipping was performed in accordance with NUS OGM 4.19.

9. Report Prepared By: Gary Bielen Date: 3/3/87

10. Approved By: [signature] Date: 3/16/87



(QUAD) AMENIA, N.Y.

FIGURE 1

SITE LOCATION MAP

AMENIA SITE, (ROUTE 22 SOUTH), AMENIA, N.Y.

SCALE; 1" = 2000'

NUS CORPORATION

A Halliburton Company

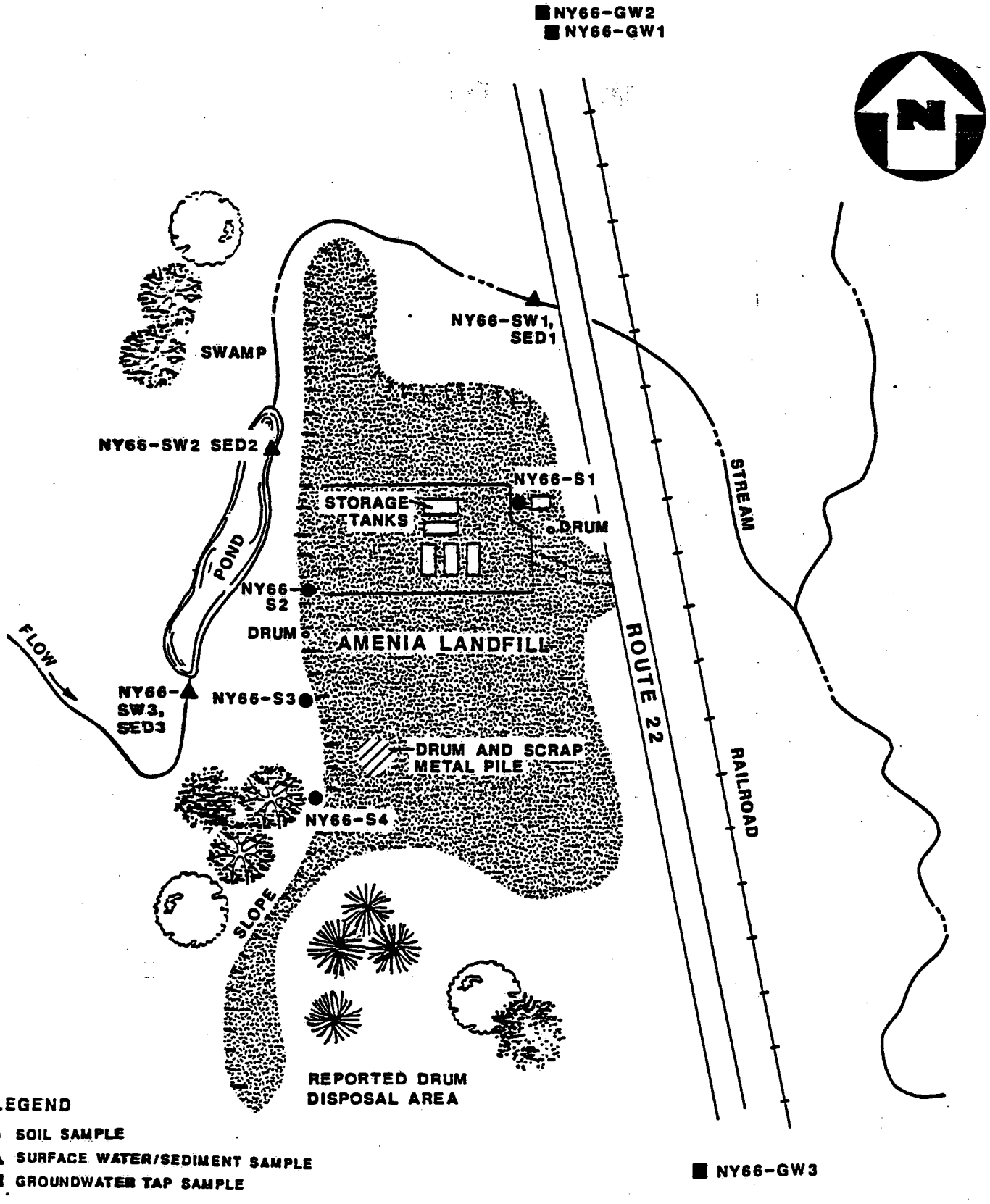


FIGURE 2

SAMPLE LOCATION MAP

AMENIA SITE, (ROUTE 22 SOUTH), AMENIA, N.Y.

(NOT TO SCALE)

NUS CORPORATION
A Halliburton Company

TABLE 1

SAMPLE DESCRIPTIONS
AMENIA SITE (ROUTE 22 SOUTH)
AMENIA, NEW YORK
CASE #6888
02/25/87

Sample ID Number	Organic Traffic Report Number	Inorganic Traffic Report Number	Time (Hours)	Sample Type	Sample Location
NY66-GW1	BI994	MBI493	1010	Groundwater	Sample taken from spigot of Amenia's town well #4. Well located off Route 22 in Amenia.
NY66-GW2	BI995	MBI494	1021	Groundwater	Sample taken from spigot of Amenia's town well #3. Well located off Main Street (Route 343).
NY66-GW3	BI996	MBI495	1110	Groundwater	Sample taken from faucet of private residence. Mr. Schiffer's home is located approximately one to two miles south of the site.
NY66-S1	BI987	MBI486	1400	Soil	Sample taken 25 feet from fence that surrounds oil storage tanks. Fifteen feet from storage tank which is located outside the fenced area. Sample depth is 0-6 inches.
NY66-S2	BI988	MBI487	1420	Soil	Sample taken six feet from end of fence that surrounds the oil storage area. Sample depth 0-6 inches.

TABLE 1 (CONT'D)

SAMPLE DESCRIPTIONS
AMENIA SITE (ROUTE 22 SOUTH)
AMENIA, NEW YORK
CASE #6888
02/25/87

Sample ID Number	Organic Traffic Report Number	Inorganic Traffic Report Number	Time (Hours)	Sample Type	Sample Location
NY66-SW2	BI998	MBI497	1440	Surface Water	Sample taken approximately 100 feet from west side of landfill in pond.
NY66-SED2	BK103	MBI501	1445	Sediment	Sample taken at same location as NY66-SW2.
NY66-S3	BI989	MBI488	1455	Soil	Sample taken on west side of landfill approximately 25 feet from pond. Sample depth is 0-6 inches.
NY66-SW3	BI999	MBI498	1530	Surface Water	Sample taken approximately 40 feet from S3, up-gradient from pond.
NY66-SED3	BK104	MBI502	1540	Sediment	Sample taken at same location as NY66-SW3.
NY66-S4	BI990	MBI489	1605	Soil	Sample taken on west side of landfill, approximately 10 feet from pond. Sample depth is 0-6 inches.
NY66-SW1	BI997	MBI~~997~~	1620	Surface Water	Sample taken approximately 40 feet from Route 22 on west side of road.

TABLE 1 (CONT'D)

SAMPLE DESCRIPTIONS
AMENIA SITE (ROUTE 22 SOUTH)
AMENIA, NEW YORK
CASE #6888
02/25/87

Sample ID Number	Organic Traffic Report Number	Inorganic Traffic Report Number	Time (Hours)	Sample Type	Sample Location
NY66-SED1	BK102	MBI500	1630	Sediment	Sample taken at same location as SW1.
NY66-BL1	BI587	MBI504	N/A	Aqueous	Collected from EPA Labs, Edison, N.J.

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

VOLATILES

SAMPLE NUMBER	NY66-GW1	NY66-GW2	NY66-GW3	NY66-SW1	NY66-SW2	NY66-SW3	NY66-BL1	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1	NY66-SED2	NY66-SED3
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Chloromethane														
Bromomethane														
Vinyl Chloride														
Chloroethane														
Methylene Chloride	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Acetone	0	0	0	0	0	0	0	0	0	0	0	390B	250B	0
Carbon Disulfide				J		J								
1,1-Dichloroethene														
1,1-Dichloroethane														
Trans-1,2-Dichloroethene														
Chloroform														
1,2-Dichloroethane														
2-Butanone														
1,1,1-Trichloroethane												34	54	36
Carbon Tetrachloride											J			
Vinyl Acetate														
Bromodichloromethane														
1,1,2,2-Tetrachloroethane														
1,2-Dichloropropane														
Trans-1,3-Dichloropropene														
Trichloroethene			J	J		J								J
Dibromochloromethane														
1,1,2-Trichloroethane														
Benzene														
Cis-1,3-Dichloropropene														
2-Chloroethylvinylether														
Bromoform														
2-Hexanone														
4-Methyl-2-Pentanone														
Tetrachloroethene														
Toluene														
Chlorobenzene														
Ethylbenzene														
Styrene														
Total Xylenes														

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
0 - analysis did not pass EPA QA/QC requirements
J - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

SEMI-VOLATILES															
SAMPLE NUMBER	MY66-GW1	MY66-GW2	MY66-GW3	MY66-SW1	MY66-SW2	MY66-SW3	MY66-BL1	MY66-S1	MY66-S2	MY66-S3	MY66-S4	MY66-SED1	MY66-SED2	MY66-SED3
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	2	2	2	2	2	2	2
4-Nitroaniline											Q			
4,6-Dinitro-2-Methylphenol											Q			
N-Nitrosodiphenylamine											Q			
4-Bromophenylphenyl ether											Q			
Hexachlorobenzene											Q			
Pentachlorophenol											Q			
Phenanthrene											Q			
Anthracene											Q			
Di-n-Butylphthalate				15		J			540J		Q			
Fluoranthene											Q			
Pyrene											Q			
Butylbenzylphthalate											Q			
3,3'-Dichlorobenzidine											Q			
Benzo(a)Anthracene											Q			
Bis(2-Ethylhexyl)Phthalate			220						1600		Q			730J
Chrysene											Q			
Di-n-Octyl Phthalate											Q			
Benzo(b)Fluoranthene											Q			
Benzo(k)Fluoranthene											Q			
Benzo(a)Pyrene											Q			
Indeno(1,2,3-cd)Pyrene											Q			
Dibenzo(a,h)Anthracene											Q			
Benzo(ghi)Perylene											Q			

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
J - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
NR - analysis not required

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

SEMI-VOLATILES

SAMPLE NUMBER	NY66-GW1	NY66-GW2	NY66-GW3	NY66-SW1	NY66-SW2	NY66-SW3	NY66-BL1	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1	NY66-SED2	NY66-SED3
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Phenol											0			
Bis(2-Chloroethyl)Ether											0			
2-Chlorophenol											0			
1,3-Dichlorobenzene											0			
1,4-Dichlorobenzene											0			
Benzyl Alcohol											0			
1,2-Dichlorobenzene											0			
2-Methylphenol											0			
Bis(2-Chloroisopropyl)Ether											0			
4-Methylphenol											0			
N-Nitroso-Di-n-Propylamine											0			
Hexachloroethane											0			
Nitrobenzene											0			
Isophorone											0			
2-Nitrophenol											0			
2,4-Dimethylphenol											0			
Benzoic Acid									670J	1200J	0			
Bis(2-Chloroethoxy)Methane											0			
2,4-Dichlorophenol											0			
1,2,4-Trichlorobenzene											0			
Naphthalene											0			
4-Chloroaniline											0			
Hexachlorobutadiene											0			
4-Chloro-3-Methylphenol											0			
2-Methylnaphthalene											0			
Hexachlorocyclopentadiene											0			
2,4,6-Trichlorophenol											0			
2,4,5-Trichlorophenol											0			
2-Chloronaphthalene											0			
2-Nitroaniline											0			
Dimethyl Phthalate											0			
Acenaphthylene											0			
3-Nitroaniline											0			
Acenaphthene											0			
2,4-Dinitrophenol											0			
4-Nitrophenol											0			
Dibenzofuran											0			
2,4-Dinitrotoluene											0			
2,6-Dinitrotoluene											0			
Diethylphthalate	J										0			
4-Chlorophenylphenyl ether											0			7400
Fluorene											0			

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

PESTICIDES/PCBs

SAMPLE NUMBER	NY66-GW1I	NY66-GW2I	NY66-GW3I	NY66-SW1I	NY66-SW2I	NY66-SW3I	NY66-BL1I	NY66-S1	NY66-S2	NY66-S3	NY66-S4	NY66-SED1I	NY66-SED2I	NY66-SED3I
TRAFFIC REPORT NUMBER	BI 994	BI 995	BI 996	BI 997	BI 998	BI 999	BI 587	BI 987	BI 988	BI 989	BI 990	BK 102	BK 103	BK 104
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
CONC./DILUTION FACTOR	1	1	1	1	1	1	1	2	2	2	2	2	2	2
Alpha-BHC								0		0	0	0	0	0
Beta-BHC								0		0	0	0	0	0
Delta-BHC								0		0	0	0	0	0
Gamma-BHC (Lindane)								0		0	0	0	0	0
Heptachlor								0		0	0	0	0	0
Aldrin								0		0	0	0	0	0
Heptachlor Epoxide								0		0	0	0	0	0
Endosulfan I								0		0	0	0	0	0
Dieldrin								0		0	0	0	0	0
4,4'-DDE								0		0	0	0	0	0
Endrin								0		0	0	0	0	0
Endosulfan II								0		0	0	0	0	0
4,4'-DDD								0		0	0	0	0	0
Endosulfan sulfate								0		0	0	0	0	0
Endrin Aldehyde								0		0	0	0	0	0
4,4'-DDT								0		0	0	0	0	0
Methoxychlor								0		0	0	0	0	0
Endrin Ketone								0		0	0	0	0	0
Chlordane								0		0	0	0	0	0
Toxaphene								0		0	0	0	0	0
Aroclor-1016								0		0	0	0	0	0
Aroclor-1221								0		0	0	0	0	0
Aroclor-1232								0		0	0	0	0	0
Aroclor-1242								0		0	0	0	0	0
Aroclor-1248								0		0	0	0	0	0
Aroclor-1254								14000J	170000	13000J	0	3700J	0	0
Aroclor-1260								0		0	0	0	0	0

NOTES TO ORGANICS DATA:
Blank space - compound analyzed for but not detected
0 - analysis did not pass EPA QA/QC requirements
J - compound present below specified detection limits, value is an estimate
B - compound found in laboratory blank as well as the sample, and indicates possible/probable blank contamination
NR - analysis not required

ANALYTICAL DATA
NAME: AMENIA LANDFILL
SAMPLING DATE: 2/25/87
CASE NUMBER: 6888

INORGANICS

SAMPLE NUMBER	MY66-GW1	MY66-GW2	MY66-GW3	MY66-SW1	MY66-SW2	MY66-SW3	MY66-BL1	MY66-S1	MY66-S2	MY66-S3	MY66-S4	MY66-SED1	MY66-SED2	MY66-SED3
TRAFFIC REPORT NUMBER	MBI 493	MBI 494	MBI 495	MBI 496	MBI 497	MBI 498	MBI 504	MBI 486	MBI 487	MBI 488	MBI 489	MBI 500	MBI 501	MBI 502
MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG	MG/KG
Aluminum	[37]			[68]	[159]	[63]	[51]	6600	10200	12800	20600	9100	7050	12000
Antimony														
Arsenic								6.4	10					
Barium	Q	Q	Q	Q	Q	Q	[4.4]	Q	[62]	[74]	[84]	[36]	[37]	[37]
Beryllium											[1.1]	[2.2]	13E	
Cadmium														
Calcium	48300	67100	77000	47100	49500	39900	[649]	Q	Q	Q	Q	Q	Q	Q
Chromium								8.6	18	17	24	[0.1]		17
Cobalt								[12]	[22]	[14]	[12]	[28]	[59]	[8.9]
Copper								22	36	50		[16]		
Iron	Q	Q	Q	902	1860	Q	[67]	20000	40900	33300	30600	58000	175000	18400
Lead		9.6						14	134	80	43	24	32	36
Magnesium	24400	28100	23100	14800	16000	12800	[193]	10800	14400	14300	6700	8520	[3890]	5410
Manganese		188	[2.6]	310	590	175		663	793	573	387	1380	1170	132
Mercury														
Nickel								26E	52E	29E	[31]	76E	193E	[24]
Potassium	[1420]	[2330]	[1620]	[1430]	[1250]	[1270]		[1100]	[1470]	[1350]	[984]	[1530]	[1440]	[732]
Selenium								2.9						
Silver														
Sodium	6250	20800	45900	5360	5300	Q	[346]	Q	Q	Q	Q	Q	Q	Q
Thallium						11								
Tin										[7.8]				NR
Vanadium								Q	Q	Q	Q	Q	Q	Q
Zinc	28	[19]	160	[7.5]	[13]	[9.9]	[18]	49	179	224	97	165	510	72

NOTES TO INORGANICS DATA:
Blank space - compound analyzed for but not detected
Q - analysis did not pass EPA QA/QC requirements
[]- compound present below specified detection limits,
value is an estimate
B - compound found in laboratory blank as well as the sample and
indicates possible/probable blank contamination
E - value estimated due to laboratory interference
NR- analysis not required

REFERENCE 10

FILE

(E)

DUTCHESS COUNTY HEALTH DEPARTMENT

MEMORANDUM

TO: Mr. Henry W. Scoralick

FROM: D. Ruff

SUBJECT: Surico Refuse Disposal Site
T. Amenia

DATE: October 26, 1970

On October 22, 1970 between 2:00-2:30 p.m., I conducted an inspection at the above noted facility. All refuse was deposited in an area approximately 50' wide and 20' deep. Operation appeared to be orderly and covering and compacting was done satisfactorily. Mr. Surico questioned if covering could be done every other day and I stated it had to be done every day.

I did not observe anywhere where industrial wastes were dumped into or near surface waters. On the upper level at the south end are stored several hundred barrels of industrial wastes and covering an area of one acre. Some barrels had been punctured with the resultant discharge of chemicals upon the surface of the ground. Mr. Surico claimed that this was the result of vandalism. He also claimed that some spillage was due to barrels falling off of fork lift. The industrial waste on surface of ground was a brownish oily, black oily, bluish and reddish brown liquid plus a white powder. The following names of companies and contents were observed on barrels:

1.	Remington Rand Electric Shaving Div. 60 Main Street Bridgeport, Connecticut	Crystoton
2.	U. S. Polymeric	P.F. Etchant' Ferris Chloride
3.	ALRAC Div. Radiation Research 649 Howe Street (P.O. Box 2109) Stamford, Connecticut	2 Pyorrolidone
4.	The Hubbard Hall Chemical Co. Waterbury, Connecticut	Mineral Spirits

Mr. Surico stated that chemicals are pumped out of barrels and shipped to New Jersey. Empty barrels are sold if not damaged. If damaged, barrels are crushed and buried.

In the summer, oil was used on entrance road to settle dust. There is a remote possibility that during a heavy rain some of this could have run off into swamp at north end. I could see no trace of chemicals in swamp areas. Mr. Surico claims all chemicals will be removed from site by November 1, 1970 and that business discontinued.

DTR/aed
HD ADM

REFERENCE 24

file 314006

MEMORANDUM

August 26, 1992

TO: Dan Eaton, Bureau of Hazardous Site Control, DHWR

FROM: Richard Koeppicus, Bureau of Environmental Protection, Division of Fish and Wildlife

SUBJECT: Old ~~America~~ Landfill, Site # 314006. Review of "Engineering Investigations at Inactive Hazardous Sites, Phase II Investigations, Old ~~America~~ Landfill, Town of Amenia, Dutchess County, New York" dated June, 1992.

Amenia

I have concluded that there is sufficient information in this document to list this site as an actual or potential threat to the environment. I believe there is sufficient information to warrant a remedial investigation i.e., the site should have class 2 status. I do not think it is necessary to do the additional step recommended on p3-22 by LMS to determine the classification of this site.

My conclusion is based on the data gathered to date that showed 15 of 20 soil samples had PCB levels from 2.3 to 250 mg/kg, 1 of 5 locations of surface water samples (AMSW-03) had a PCB level of 0.060 ug/l and 3 of 5 sediment samples had PCB levels from 0.510 to 5.20 mg/kg. These levels show widespread contamination and are of significance to wildlife.

for Richard Koeppicus

Supervising Fish and Wildlife Ecologist

RK:rd
cc: J. Cooper
B. MacMillan

RK65.mem/rd26

PHOTOGRAPH A
OLD AMENIA DUMP
TAKEN 4-12-70
1" = 100'

N


PHOTOGRAPH B
OLD AMENIA DUMP
TAKEN 4-23-90
1" = 100'
N